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No. _____

In The

Supreme Court of the United States

SENIOR TECHNOLOGIES, INC.,

Petitioner,

v.

R.F. TECHNOLOGIES, INC.,

Respondent.

On Petition For Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTIONS PRESENTED FOR REVIEW

1. In a patent infringement action, can a patent claim that literally and unambiguously reads on an accused device be construed to include a limitation based on the patent specification?

2. Is a limitation that was construed to be in a claim precluded from being expanded under the doctrine of equivalents because the construed limitation is described in the specification in absolute terms or because it was construed to be in the claim rather than being introduced by the patentee?

PARTIES TO THE PROCEEDING AND CORPORATE DISCLOSURE STATEMENT

Petitioner: Stanley Security Solutions, Inc. dba Senior Technologies (formerly Senior Technologies, Inc.)

Petitioner's Corporate Disclosure Statement:

All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party represented by me are:

> The Stanley Works owns all of the stock of Stanley Security Solutions, Inc. and is the only parent corporation holding 10 percent of the stock or more.

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PETITION FOR WRIT OF CERTIORARI

The Petitioner, Senior Technologies, Inc., respectfully prays that a writ of certiorari issue to review the judgment of the United States Court of Appeals for the Federal Circuit, entered in this proceeding on September 17, 2003.

CITATIONS OF REPORTS OF OPINIONS ENTERED IN THE CASE

The published decision of the United States District Court for the District of Nebraska in *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, is reported at 58 F.Supp.2d 1076 (D. Neb. July 26, 1999). Appendix A-38 to A-74. *(Senior Tech I)*

The decision of the United States Court of Appeals for the Federal Circuit dated March 12, 2001, *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, 2001 U.S. App. LEXIS 4179 (Fed. Cir. March 12, 2001). Appendix A-14 to A-37. *(Senior Tech II)*

The denial of the petition for rehearing entered April 5, 2001, *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, 13 Fed. Appx. 930, 2001 U.S. App. LEXIS 7549 (Fed. Cir. April 5, 2001). Appendix A-13.

The judgment of the United States Supreme Court in case 01-35, issued June 3, 2002, vacating the judgment of the United States Court of Appeals for the Federal Circuit and remanding this case, *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, 535 U.S. 1108, 122 S.Ct. 2323, 153 L.Ed.2d 151 (June 3, 2002). Appendix A-12. *(Senior Tech III)*

The decision of the United States Court of Appeals for the Federal Circuit dated September 17, 2003, following

remand, *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, 76 Fed. Appx. 318, 2003 U.S. App. LEXIS 19216 (Fed. Cir. September 17, 2003). Appendix A-1 to A-11. *(Senior Tech IV)*

The denial of the petition for rehearing entered October 21, 2003, *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, 2003 U.S. App. LEXIS 24132 (Fed. Cir. October 21, 2003). Appendix A-75.

BASIS FOR SUPREME COURT JURISDICTION

This case is a patent infringement case decided and entered by the United States Court of Appeals for the Federal Circuit on September 17, 2003, attached hereto in Appendix A-1. A timely filed petition for rehearing by the appellant was denied October 21, 2003, which denial is attached hereto in Appendix A-75. The jurisdiction of this Court is invoked under 28 U.S.C. §1254(1) (1988). The pertinent portions of 28 U.S.C. §1254 are:

> "§ 1254. Courts of appeals; certiorari; certified questions
>
> Cases in the courts of appeals may be reviewed by the Supreme Court by the following methods:
>
> (1) By writ of certiorari granted upon the petition of any party to any civil or criminal case, before or after rendition of judgment or decree;
>
> . . . .
>
> (June 25, 1948, c. 646, 62 Stat. 928; June 27, 1988, Pub. L. 100-352, §2(a), (b), 102 Stat. 662.)".

STATUTES INVOLVED IN THE CASE

Title 35 U.S.C. §102:

"§102 Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless-

* * *

(b) the invention was . . . in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or. . . .

(July 19, 1952, ch. 950, §1, 66 Stat. 797; July 28, 1972, Pub. L. 92-358, §2, 86 Stat. 502; Nov. 14, 1975, Pub. L. 94-131, §5, 89 Stat. 691; Nov. 29, 1999, Pub. L. 106-113, §§4505, 4806, 113 Stat. 1501A-565,590.)".

Title 35 U.S.C. §112:

"§112 Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. . . .

(July 19, 1952, ch. 950, §1, 66 Stat. 798; July 24, 1965, Pub. L. 89-83, §9, 79 Stat. 261; Nov. 14, 1975, Pub. L. 94-131, §7, 89 Stat. 691.)".

Title 35 U.S.C. §132:

"§132 Notice of rejection; reexamination

(a) Whenever, on examination, any claim for a patent is rejected, or any objection or requirement made, the Director shall notify the applicant thereof, stating the reasons for such rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application; and if after receiving such notice, the applicant persists in his claim for a patent, with or without amendment, the application shall be reexamined. No amendment shall introduce new matter into the disclosure of the invention.

(b) The Director shall prescribe regulations to provide for the continued examination of applications for patent at the request of the applicant. The Director may establish appropriate fees for such continued examination and shall provide a 50 percent reduction in such fees for small entities that qualify for reduced fees under section 41(h)(1) of this title.

(July 19, 1952, ch.950, §1, 66 Stat. 801; Nov. 29, 1999, Pub. L. 106-113, §4403, 113 Stat. 1501A-568.)".

Title 35 U.S.C. §271:

"§271 Infringement of patent

(a) Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent. . . .

(July 19, 1952, ch. 950, §1, 66 Stat. 811; Sept. 24, 1984, Pub. L. 98-417, §202, 98 Stat. 1603; Nov. 8,

1984, Pub. L. 98-622, §101, 98 Stat. 3383; Aug. 23, 1988, Pub. L. 100-418, §9003, 102 Stat. 1563-64; Nov. 16, 1988, Pub. L. 100-670, §201, 102 Stat. 3988-3989; Nov. 19, 1988, Pub. L. 100-703, §201, 102 Stat. 4676; Oct. 28, 1992, Pub. L. 102-560, §2, 106 Stat. 4230; Dec. 8, 1994, Pub. L. 103-465, §533, 108 Stat. 4988.)".

STATEMENT OF THE CASE

A. Summary

On July 26, 1999, the U.S. District Court for the District of Nebraska issued its findings of fact and conclusions of law and ordered that judgment be entered against the plaintiff, Senior Technologies, Inc., on plaintiff's infringement claims. The U.S. Court of Appeals for the Federal Circuit (CAFC) decided an appeal by Senior Technologies, Inc. from the decision of noninfringement. The CAFC found clear error in the District Court's decision of noninfringement, but applied alternative grounds for affirming the U.S. District Court for the District of Nebraska.

For its alternative grounds, the CAFC construed claim 1 to have additional limitations referred to as the "single housing" limitation. A petition for certiorari to the United States Supreme Court was filed and on June 3, 2002, was granted and this case was remanded for reconsideration in the light of *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002) (*Festo VIII*).

In its reconsideration after remand, the CAFC repeated its construction of claim 1 as including the "single housing" limitation, dropped its file wrapper estoppel holding in view of *Festo VIII* and held that claim 1 could not be expanded under the doctrine of equivalents because

the "single housing" limitation was construed by the CAFC to be in claim 1, the single housing was unequivocal in the specification and binary by nature, i.e., either a single housing or the opposite, not a single housing.

A request for rehearing was filed October 8, 2003, and denied October 21, 2003. This petition is taken from the decision of the CAFC of September 17, 2003.

B. The Action, Jurisdiction, Trial, Judgment, Findings of Fact and Conclusions of Law

This action was brought by the petitioner herein in the United States District Court for the District of Nebraska in July of 1997, for infringement of U.S. Patents 4,682,155 and 5,268,670. The defendant, R.F. Technologies, Inc., respondent herein, counterclaimed for a declaration of invalidity, noninfringement and unenforceability. Jurisdiction and venue of the Court of first instance was invoked under §§1338(a), 1400(b), and 2201 of Title 28 U.S.C. and §§271, 281, 283, 284 and 285 of Title 35 U.S.C.

On July 26, 1999, the District Court below entered its findings of fact and conclusions of law and a judgment order was entered on September 1, 1999, for the defendant, R.F. Technologies, Inc., on noninfringement, and for the plaintiff, Senior Technologies, Inc., on the counterclaim for invalidity and unenforceability. A copy of the reported case is in Appendix A-38 to A-74. *Senior Tech., Inc. v. R.F. Tech.*, 58 F.Supp. 2d 1076 (D. Neb. 1999) *(Senior Tech I)*.

C. Appeal to the U.S. Court of Appeals for the Federal Circuit and its Decision

A Notice of Appeal was filed by Senior Technologies, Inc. on September 30, 1999, from the decision of noninfringement. A Notice of Cross-Appeal was filed by R.F. Technologies, Inc. on October 12, 1999, from the rulings on claim definiteness, invalidity, inequitable conduct, and attorney's fees. The case on appeal was argued on October 6, 2000, before the CAFC. It was decided on March 12, 2001. *Senior Technologies, Inc. v. R.F. Technologies, Inc.*, Appeal 00-1089, -1090 *(Senior Tech II)*. Appendix A-14 to A-37.

The CAFC found clear error in the District Court's decision of noninfringement with respect to direct or literal infringement (Appendix A-21, line 29 through A-22, line 2), but applied alternative grounds for noninfringement (Appendix A-22, line 24 through A-23, line 2). In considering the alternative grounds for noninfringement of claim 1, the CAFC construed claim 1 as being limited to a "single sensing module housing" that includes a radio receiver and sensing means (a housing for the transmitter is recited in claim 1, but not a housing for the receiver or sensing module) (Appendix A-23, first full paragraph through A-27). The CAFC held that the doctrine of equivalents cannot be used to expand the claim under *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 187 F.3d 1381, 51 USPQ2d 1959 (Fed. Cir. 1999) *(Festo VII)* and *Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*, 73 F.3d 1573, 37 USPQ2d 1365 (Fed. Cir. 1996). *Festo VII* was applied on the ground that claim 1 was amended "such that the receiving circuit" would be specifically located "in the sensing module" (Appendix A-26, lines 17-18), and *Athletic, supra* on the ground

it would "eviscerate the construed limitation" (Appendix A-29, line 5).

A request for rehearing was filed and refused (Appendix A-13). The rehearing was requested: (1) to reconsider the holding that claim 1 was amended such that "the receiving circuit" would be specifically located "in the sensing module" rather than this limitation being in the original claim and another portion of the claim amended to conform in language to it for clarity; (2) that the limitation of a single housing should not have been construed to be in claim 1; and (3) dependent claim 4 supports the position that the sensing means is outside any construed housing.

D. First Petition for Certiorari and Remand

A petition for certiorari was filed July 3, 2001, with three questions, which were: (1) Under what circumstances is it proper for the Court to construe a claim to include a limitation not directly recited in the claim?; (2) Does an amendment to a claim that only repeats a limitation for clarity create file wrapper estoppel that prevents the doctrine of equivalents from being applied to the limitation under *Festo Corp. v Shoketsu Kinzoku Kogyo Kabushiki Co.*, 187 F. 3d 1381, 51 USPQ2d 1959 (Fed. Cir. 1999) *(Festo VII)*; and (3) May a limitation that was construed to be in a claim but is not necessary to understand any other term in the claim be expanded under the doctrine of equivalents?.

The three questions were directed to the new grounds for noninfringement provided by the CAFC: (1) that claim 1 should be construed to include a sensing-module housing, which is not literally recited in the claim (Appendix A-23, first and second paragraphs); (2) that the doctrine of equivalents cannot be applied under *Festo Corp. v.*

Shoketsu Kinzoku Kogyo Kabushiki Co., 187 F.3d 1381, 51 USPQ2d 1959 (Fed. Cir. 1999), because claim 1 was amended to cure ambiguities (Appendix A-26, first full paragraph); and (3) that any effort to expand claim 1 would eviscerate the construed limitation under *Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*, 73 F.3d 1573, 37 USPQ2d 1365 (Fed. Cir. 1996) (Appendix A-29, first paragraph).

The Court granted the petition for certiorari on June 3, 2002 (*Senior Tech III*; Appendix A-12) and remanded to the CAFC to reconsider in the light of its decision in *Festo VIII*.

E. Decision of the CAFC on Reconsideration from the United States Supreme Court

On September 17, 2003, the CAFC issued its opinion (*Senior Tech IV*; Appendix A-1 to A-11) again affirming the lower court's noninfringement judgment by construing claim 1 to require a receiver and sensing means to be in a single housing. (The accused models CA9100, CA9120 and CA600 were not infringed because the receiver was in two housings and model CA9000 was not infringed because the sensing means which is an antenna was not in the same housing as the receiver.) Thus, this case was reconsidered in the light of *Festo VIII* but the decision did not mention the issue before the United States Supreme Court of whether a limitation was impermissively read from the specification into claim 1 (question 1: "1. Under what circumstances is it proper for the Court to construe a claim to include a limitation not directly recited in the claim?"). A request for rehearing was filed October 8, 2003, and denied October 21, 2003. Appendix A-75.

F. Claim Presented for Review

Claim 1 of U.S. Patent 4,682,155 (Appendix A-96 and A-97) is the only claim presented for review. Claim 1 is:

> "1. A security sensing system for monitoring the passage of persons through a door or like opening comprising:
>
> a transmitter module for installing on persons to be monitored, a sensing module for installing adjacent to a door opening to be monitored, and means responsive to the opening of the door to enable the sensing module to respond to the signal transmitted by the transmitter module to produce an output response, and alarm means energizable in response to the production of the output response to produce an alarm condition,
>
> the transmitter module including a housing having a transmitter circuit, a source of power for the transmitter circuit and transmitter antenna means installed therein,
>
> the sensing module including a receiving circuit and associated sensing means located adjacent to the door opening to be monitored, and
>
> said means responsive to the opening of the door including means to enable the receiving circuit in the sensing module whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response for energizing the alarm means.".

REASONS FOR ALLOWANCE OF WRIT

A. Summary

At one time, if the language of a patent claim read literally and unambiguously on the accused device, there

was infringement and that was the end of it. *Graver Tank & Mfg. Co., Inc., et al. v. Linde Air Products Co.*, 339 U.S. 605 at 607, 70 S.Ct. 854, 94 L.Ed. 1097, 85 USPQ 328 (1950). Now under a string of recent cases, one of which is this case, *Senior Tech IV*, before the Court on petition, every patent practitioner and every lower court when deciding if a claim is infringed must first ask what limitations, not recited in the claim but described in the specification, can be construed as being in the claim.

According to these recent cases, construction of a claim to include new limitations is no longer limited to claims that are so ambiguous that one cannot tell if they read literally on the accused device. The recent cases offer a cafeteria of reasons for reading a limitation from the specification into the claims, limiting the ability of the public to know what it is free to do. The first question presented in this petition addresses the confusion resulting from these recent cases.

This case, *Senior Tech IV*, is a suitable case to end the confusion over when a limitation can be construed to be in a claim because it is singularly uncomplicated. It is uncomplicated because: (1) no prior art has been applied against claim 1 which is the only claim in issue (validity was challenged under 35 U.S.C. §102 on the ground that the patentee had put an item with the invention on sale more than a year before filing the patent application, but that challenge failed); (2) no arguments were made as to the benefits or need for the limitation construed to be in claim 1; (3) the only amendment to claim 1 was to conform the language latter in the claim to earlier language and did not narrow the scope of the claim; (4) the limitation construed to be in claim 1 does not play a functional role in the operation of the invention; and (5) embodiments are

disclosed in the specification other than the one specific to the added limitations. Thus, the holding in this case can simply and clearly answer the question put by Justice Brown when he wrote in *McCarty v. Lehigh Valley Railroad Company*, 160 U.S. 110, 116 (1895) as follows:

> "[W]e know of no principle of law which would authorize us to read into a claim an element which is not present, for the purpose of making out a case of novelty or infringement. The difficulty is that if we once begin to include elements not mentioned in the claim in order to limit such claim . . . , we should never know where to stop.". *McCarty v. Lehigh Valley R. Co.*, 160 U.S. 110, 116.

The second question presented in this petition also relates to the ability of the public to know with reasonable certainty the scope of patent claims and what the public is free to do or cannot lawfully do. The second question concerns the circumstance of there not being literal infringement because of the limitations construed to be in the claim. Under this circumstance, can the doctrine of equivalents cause there to be infringement? Although the limitation construed to be in claim 1 plays no role in the operation of the circuit, the CAFC held that the doctrine of equivalents could not be applied because the limitation was construed to be in the claim and was described absolutely in the specification, e.g., the specification described a housing and since there must either be a housing or not, the claim cannot be expanded under the doctrine of equivalents to cover a circuit with two housings which is the opposite of a single housing. This new limitation on the doctrine of equivalents sidesteps *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 122 S.Ct. 1831 (2002) (*Festo VIII*).

B. The Ability of Public to Know What Is Protected And What it Is Entitled to Use Is Jeopardized by This Case

Patent claims in the United States serve a notice function of informing the public of what is covered. Under *Graver*, *supra*, if the claim read literally on a proposed device or a device already on sale, there was infringement and that was the end of it. If the claim was so ambiguous that it can not be known whether it reads on the accused device, the Court interprets the claim to resolve the ambiguity. *Markman v. Westview Instruments,* 52 F.3d 967, 979-980, 34 USPQ2d 1321, 1329 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370, 134 L.Ed.2d 577, 116 S.Ct. 1384 (1996).

However, *Senior Tech IV* before the Court on petition for certiorari substantially weakens the notice function by permitting limitations to be construed to be in a claim without finding ambiguity in the claim (*Senior Tech II*, Appendix A-23; *Senior Tech IV*, Appendix A-3 to A-4). It also provides a new ground for precluding expansion of the claim under the doctrine of equivalents that creates further ambiguity because any positively recited element can be interpreted as binary and precluded from expansion under the doctrine of equivalents.

This case *(Senior Tech IV)* is only the last of a series of cases starting with the 1997 case, *O.I. Corporation v. Tekmar Company Incorporated*, 115 F.3d 1576, 42 USPQ2d 1777 (Fed. Cir. 1997) and ending with this case in which limitations were introduced into a claim in the absence of ambiguity that would prevent a determination of whether the claim read on the accused device. These cases are:

DATE	CASE CITATION	LIMITATION AND REASON FOR IT
1997	*O.I. Corporation v. Tekmar Company Incorporated,* 115 F.3d 1576, 42 USPQ2d 1777 (Fed. Cir. 1997)	The specification described the limitation "non-cylindrical" for a passageway as a first feature that caused swirling to remove steam of an inventive system for removing steam and said prior art passageways were generally smooth and cylindrical when describing that first feature. The "non-cylindrical" limitation was added to a different claim directed to a different feature that used heat to remove steam instead of first feature.
1999	*Wang Laboratories, Inc. v. America Online, Inc. and Netscape Communications Corp.*, 197 F.3d 1377, 53 USPQ2d 1161 (Fed. Cir. 1999)	Only one embodiment (character based frame) was described in the specification so claim was limited to character based frames and did not cover others such as bit map frames.
2000	*Watts v. X L Systems, Inc.,* 232 F.3d 877, 56 USPQ2d 1836 (Fed. Cir. 2000)	Claim was limited to misaligned screw threads because it was the only seal described in specification and argued during prosecution.

2001	*Scimed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 58 USPQ2d 1059 (Fed. Cir. 2001)	Only coaxial tubes were described in the specification, so claim was limited to coaxial tubes so as to not cover side by side tubes.
2003	*Alloc, Inc., Berry Finance N.V., and Valinge Aluminium, AB v. International Trade Commission and Pergo, Inc. and Roysol, and Akzenta Paneele + Profile GmbH, and Unilin Decor N.V., BHK of America, and Meister-Leisten Schulte, GmbH*, 342 F.3d 1361, 68 USPQ2d 1161 (Fed. Cir. 2003)	The original claims were limited but claims added later were broader and the applicant had argued that the prior art lacked this limitation. The applicant revealed to the examiner that the limitation had been removed from the broader claims when they were introduced.
2003	*Senior Tech IV*, Appendix A-3 to A-4; *Senior Tech II;* Appendix A-27, A-28, A-96, A-101 to A-120	The limitation (single housing for radio receiver and antenna) was described in the specification. No prior art was cited against this claim. There were other embodiments described in the specification and no arguments were made during prosecution limiting scope of claim.

These cases, referred to herein as the O.I. Corp – Senior Tech line of cases, fulfill the prediction of Justice Brown in *McCarty v. Lehigh Valley Railroad Co.*, *supra*,

and show the need for this Court to answer his question about where to stop including "elements not mentioned in the claim in order to limit such claim." *Senior Tech IV* can answer this question and end the confusion.

C. Under What Circumstances Is It Permissible For the Court to Construe a Claim to Include a Limitation Not Recited in the Claim?

The notice function of patent claims is unnecessarily weakened when claims have a limitation construed into them even though they can be unambiguously read on an accused device. When the claims are so ambiguous that it cannot be known if the claim reads on the accused device, then it is proper to construe the claims to include another limitation, *Markman v. Westview Instruments*, *supra*, even if the reason for doing so would be one of the same reasons used improperly in the above sequence of cases to introduce limitations into claims that read on the accused device without ambiguity.

The notice function and the incentive function of claims are served best under the holding of *Graver, supra*, and not under the O.I. Corp. – Senior Tech line of cases.

D. The O.I. Corp – Senior Tech line of cases conflicts with *Graver, supra* under *Graver, supra,* if the literal words of the claim applied unambiguously to the accused device there was direct infringement and "that was the end of it."

This principle stated in *Graver, supra* is sound and similar to the principles of contract law. The specification is drafted and filed early in the history of the invention. Indeed, unless it is filed within one year of the first offer

for sale, it is invalid, 35 U.S.C. §102. The patent application is examined and the claims originally filed are searched by the examiner of the United States Patent and Trademark Office, 35 U.S.C. §132(a) and 35 U.S.C. §132(b). The examiner cites prior art and the final language of the claims are arrived at during prosecution of the application before the patent issues. See Appendix A-101 to A-120.

Thus, the granted claims define the final version of what the patentable invention or inventions are as agreed upon by the United States Patent and Trademark Office and the applicant for patent. The specification is a description of the device containing the patentable invention as required by 35 U.S.C. §112 and may also include descriptions of unpatentable structure and methods, and under some circumstances, other patentable inventions that the applicant chooses not to pursue.

If the final expression of the invention worked out between the examiner and the applicant unambiguously answers the literal infringement question before the Court, why should the parties and the Court look to the specification which was first prepared with less information or look to the negotiations between the examiner and applicant leading up to the final agreed upon wording? In the absence of fraud or mutual mistake of fact, even an earlier disclaimer of a part of the consideration of a contract would not stand up if it contradicted the language of the contract that the parties finally agreed upon. This approach leads to finality without extensive litigation. This principle is in accordance with the long established law holding that a limitation should not be imported into a claim unless it is necessary to rely on the limitation to determine what is meant by a limitation already in the claim, *Renishaw PLC v. Marposs Societa' Per Azioni*, 158

F.3d 1243, 48 USPQ2d 1117 (Fed. Cir. 1998), *McCarty v. Lehigh Valley Railroad Co.*, 160 U.S. 110, 16 S.Ct. 240, 40 L.Ed. 358 (1895). *Comark Communications, Inc. v. Harris Corporation*, 156 F. 3d 1182, 48 USPQ2d 1001 (Fed. Cir. 1998).

E. The holding in this case is an unwarranted expansion of this Court's decision in *United States v. Adams, et al.*, 383 U.S. 39, 49, 148 USPQ 479, 482, 15 L.Ed. 2d 572, 86 S.Ct. 708 (1966) and the decision of the Court of Appeals for the Federal Circuit in *Markman v. Westview Instruments*, 52 F.3d 967, 979-980, 34 USPQ2d 1321 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370, 134 L.Ed.2d 577, 116 S.Ct. 1384 (1996).

It is true that the claims are to be read in the light of the specification. However, the role that the specification played in interpreting the claims was at one time to determine what the invention is (why a limitation is inventive), *United States v. Adams, supra* and for interpreting ambiguous parts of a claim to learn what was agreed upon by the patent examiner and the patent attorney during the prosecution of the patent application before the United States Patent Office. *Markman v. Westview Instruments, supra.* This role has now evolved to limiting claims by introduction of new structure not explicitly recited in the claim based on the description of that structure in the specification as in *Senior Tech IV* and the O.I. Corp – Senior Tech line of cases.

F. This single test of *Graver, supra* is now being replaced by a series of different and conflicting tests including the test used in this case before the Court on petition for certiorari.

The O.I. Corp – Senior Tech cases use one of three tests to determine if a limitation can be read into a claim, which are: (1) there is only one embodiment in the specification; (2) there is only one embodiment in the specification and the limitation was argued during prosecution or in the specification; and (3) it was described in one of a plurality of embodiments *(Senior Tech IV)* in a case in which no prior art was found to cite against the claim, the limitation was never argued anywhere and it was irrelevant to the operation of the invention. These are illustrated in the above table under heading B of this section.

G. Under the holding of this case, an opportunity is provided to choose a result and then select a test that will provide that result.

The petitioner in this case believes the CAFC erroneously followed the *O.I. Corp – Senior Tech* line of cases rather than the line of cases of which *Graver, supra* is a part. In *Graver, supra,* this Court based infringement on the strict language of the claims, relying on it as the final language negotiated between the examiner and the applicant as to what parts of the inventions disclosed at the beginning of the prosecution in the specification are the patented invention. *Senior Tech IV* places emphasis on the first look at the device developed by the inventors and the first impression of which inventions incorporated in the disclosed device or part of the disclosed device are patentable. It permits adding virtually any limitation into a claim to avoid literal infringement. Since the specification

includes a description of a preferred embodiment in accordance with 35 U.S.C. §112, first paragraph (but not necessarily all embodiments), an item from the preferred embodiment picked by the copiest can be read into the claim under *Senior Tech IV.*

H. There is literal infringement of claim 1 in this case and the holding in *Graver, supra* would have ended the matter if it were still the prevailing law.

The CAFC in reversing the District Court's holding of noninfringement found noninfringement on a new ground by construing claim 1 as including "a single housing limitation" for the sensing module. It did not consider literal infringement of the claims in the form they were before construing them to include a single housing for the sensing module. The CAFC in its findings does make it clear that it believed the accused devices operated according to the same patented principle covered in claim 1 and that it regarded claim 1 to read literally on the accused units except for its construed limitations. (Appendix A-3, A-4, A-23)

The CAFC described the patented invention in its March 12, 2001, decision (see Appendix A-17) as follows:

> "In general terms, the invention of the '155 patent begins with a transmitter, typically worn on the wrists or ankles of a person being monitored. The transmitter continuously transmits a signal that, if within range, can be received by the antenna of a fixed unit mounted near a door opening. Contained within the housing of the fixed unit is what the '155 patent refers to as 'a receiving circuit.' The function of the receiving circuit is to take the signal picked up by the

> antenna, and, depending on whether or not the door being monitored is open, generate an output signal that sounds an alarm.".

The operation of the accused devices is described by the CAFC in the same decision (see Appendix A-17 and A-18) as follows:

> "All of the Code Alert products associated with this litigation involve transmitters to be worn by those persons being monitored. In addition, the CA9000, first introduced in 1992, included an antenna mounted near a doorway, a control unit containing a microprocessor and additional circuitry, and a door switch connected to the control unit's microprocessor. The CA9100, introduced in 1994, differed from the CA9000 in that the circuitry located originally in the control unit was removed and placed in the antenna mounted near the door. The microprocessor, however, remained in the control unit. The CA9120 and the CA600, introduced in 1995 and 1998 respectively, possessed the same relevant features as the CA9100 for purposes of this appeal.".

Clearly the principle of operation of the accused device is the same as that of the claimed patentable invention. The principle of operation of the claimed invention and the accused device is captured in claim 1 quoted on page 10 (see section F under "Statement of the Case"). Obviously the accused device is covered by this claim and the CAFC did not hold otherwise and would not have found it necessary to construe a limitation into this claim if it did not read literally on the accused device.

However, the CAFC construed the claim as requiring the sensing means and receiver to be in a single housing as it construed the description in the specification of one embodiment to say. The patent specification actually

describes three arrangements of housings and antennas: (1) one housing for the receiving circuit with no antenna mentioned (Appendix A-95); (2) one housing on each side of a door acting as master and slave (Appendix A-96, lines 7-15); and (3) the antenna 188 stretches across the door opening (Appendix A-95, line 33 through A-96, line 1).

The sensing-module housing 174 for the receiver is referred to only in the description of FIG. 5 of the specification (Appendix A-95, lines 14 and 15). It is shown in Figures 5, 6, and 7 (Appendix A-80), but is only indicated by its reference numeral 174 in Figure 5 and no antenna is shown in this figure, perhaps indicating simplification or that the antenna (sensing means) is inside the housing 174 (Appendix A-95). The CAFC seems to have construed the specification in this manner (Appendix A-27 through A-29).

The sensing module or receiver circuit or unit 14 is referred to throughout the specification, most notably on Appendix pages: A-81, lines 12 and 13; A-82, line 20; A-83, lines 3-5; A-84, lines 23-25; A-85, lines 11-12; A-86, line 27 (reference numeral given); A-87, line 32 (reference numeral); A-90, lines 31-33 (reference numeral); A-92, lines 15, 20, 25 and 30 (reference numerals); A-94, line 20 (reference numeral); A-95, lines 20 (part of receiver or sensing module), 22 and 28 (reference numerals); and on A-96, line 6 (reference numeral). The receiver is described as being in the sensing-module housing in the specification and is shown in two of the drawings as being in the sensing-module housing. The sensing means (antenna as stated at Appendix A-88, line 8) is described by the CAFC in one embodiment as being in the sensing-module housing and in another as being on the door (Appendix A-27 through A-29). It is described as being outside the housing

and on the door at Appendix A-95, lines 28 and 29, and shown in Appendix A-80 at reference numeral 188.

Claim 4 supports a construction that the sensing means is outside of any sensing-module housing rather than supporting the construction that the sensing means and receiving circuit must be within the unrecited sensing-module housing. The ordinary and usual meaning of the words, "associated with" is not "part of" but is "connected with" as an outside television antenna can be connected by a long wire to an inside television set.

Since no references have been cited against claim 1, this record indicates Mr. Shirley, the inventor, was the first to analyze the problem that existed in the care of certain patients for whom it is unsafe to leave the premises. Often large numbers of such patients are within a nursing home and the nursing home is a busy place in which non-patients must come and go regularly. The danger is that a patient will go through the same door that others are using without the staff knowing of it.

Mr. Shirley conceived of a new solution to this problem but not the only possible solution. His solution recognized that a transmitter could be put on the wrist or ankle of a patient or some other location on the patient and the patient would leave it in place. He recognized that if the occurrence of a patient near an open door is detected, it was reason to summon an attendant from the attendant's other duties to protect that patient. Thus, a transmitter was carried by the patient and an antennae near the door received the signal and conducted it to the radio receiver. The coincidence of a signal indicating the door was open and a received signal from the patient sounds an alarm.

The defendant copied this principle in great detail although many alternatives could have been used by the

defendant. The defendant could have invested money in other detection systems such as the type of radio detector that wildlife personnel use to track animals or a system in which television cameras are mounted at a plurality of doors with a receiver in a central monitored location. However, rather than developing the many other alternatives, which the patent law is intended to encourage, the defendant utilized the same mechanism patented by the plaintiff, making only the trivial change of mounting different components of the radio receiver in different housings, stretching the conductors between housings, and then arguing noninfringement based on a limitation that the court may read into a claim. Permitting this not only deprives the inventor and the inventor's investors from the reward set aside by Congress as an incentive, but also removes the incentive for others to invest in more substantial improvements.

I. With the erosion of the decision in *Graver, supra*, counsel can no longer advise clients with confidence that a competitor is or is not infringing but must advise the clients that court intervention is needed to determine infringement.

At this point in time, *Graver, supra* has been vitiated and infringement can no longer be determined by attempting to read the language of the claim on the accused device. One must read the specification to determine direct infringement but there is no fixed and known criteria for what in the specification will determine infringement. Because literal infringement occurs only if the accused device contains every limitation in the claim, *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993), *cert. denied*,

uncertainty as to the circumstances under which a limitation can be construed to be in a claim creates a corresponding uncertainty as to what the public can do and what would infringe on a patentee's rights.

J. Two parts to the second question presented for review: (1) is construed limitation precluded from expansion under the doctrine of equivalents; and (2) is limitation that is described in absolute terms precluded from expansion under the doctrine of equivalents.

Each of the two parts to the second question presented for review is discussed separately below as follows:

1. Is a limitation of a housing containing specified radio components that was construed to be in a claim directed to a radio detection system precluded from being expanded under the doctrine of equivalents because it was construed rather than being introduced by the patentee.

In its decision on reconsideration of the remand from the United States Supreme Court decided September 17, 2003, from which this petition is taken, the CAFC states (Appendix A-6):

> "In *Senior Tech III*, we held that 'infringement under the doctrine of equivalents with regard to the CA9100, CA9120, and CA600 models is precluded' because amendments to the asserted claims during prosecution completely barred the application of the doctrine of equivalents. *Senior Tech III*, 2001 U.S. App. LEXIS 4179, at *17-18 (citing *Festo VII*, 234 F.3d 558).

> In light of *Festo VIII*, our conclusion based on that reasoning is no longer valid.".

Apparently, there is no longer a question of file wrapper estoppel by the amendments made to claim 1. There are no disclaimers in the specification or the arguments by the patentee nor is an expansion under the doctrine of equivalents precluded because it would cause claim 1 to be invalid over prior art of record. There has been no surrender of embodiments without a housing nor of multiple housings. No prior art was even cited or argued against claim 1.

The single housing limitation is an example of what Justice Jackson meant when he wrote in *Graver*, *supra*, at 607:

> "unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law.".

The logic behind the doctrine of equivalents applies whether the claim is construed to have the irrelevant limitation or the applicant inserted the irrelevant limitation. The two housings of the accused units perform substantially the same function in substantially the same way to obtain the same result as the "single housing" limitation construed to be in claim 1. *Graver*, *supra* at 608. Thus, even if there is no literal infringement there is infringement under the doctrine of equivalents.

2. Is a limitation of a housing containing specified radio components that was construed to be in a claim directed to a radio detection system precluded from being expanded under the doctrine of equivalents because it was described in absolute terms in the specification.

The CAFC applied a different line of reasoning to one of the models accused of infringing, the CA9000. With respect to the model CA9000, the decision states (Appendix A-9 to A-10):

> "Applying the well-settled rule summarized in *Scimed* to the alleged infringement of claim 1 by the CA9000 model, we explained that 'an attempt to expand the scope of claim 1 under the doctrine of equivalents to encompass the accused devices, which have antennae located outside of the receiving circuit's housing, would *eviscerate* the construed limitation that they [the antenna and the receiving circuit] be contained within the housing.'".

With this approach, *Festo VIII*, recently decided by the Court, becomes meaningless when the CAFC construes a limitation to be in a claim, even when the claims and specification describe the embodiment in the accused device (in this case the drawings show the antenna to be outside of the housing and the specification describes it as outside of the two housings in some embodiments; Appendix A-27, A-28, A-96, A-101 to A-120).

The CAFC held (Appendix A-7):

> "As in *Lockheed*, we have reconsidered the case and concluded that the judgment of the district court should be affirmed on another ground. That other ground is the patentee's implicit and

> necessary exclusion of a structural feature opposite from the claimed structure. *See Scimed Life Sys. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1345-47 (Fed. Cir. 2001). In *Scimed*, we explained that "because the scope of the claim was limited in a way that plainly and necessarily excluded a structural feature that was the opposite of the one recited in the claim, that different structure could not be brought within the scope of patent protection through the doctrine of equivalents." *Id.* at 1346. In other words, in a binary choice situation where there are only two structural options, the patentee's claiming of one structural option implicitly and necessarily precludes the capture of the other structural option through the doctrine of equivalents. . . .".

The Court here is extending a rule against expanding a claim to cover an expressly disclaimed embodiment to a situation in which the examiner and applicant agreed to language covering the embodiment and there was no disclaimer. It is binary, as the Court states, in that if there is one housing there cannot be two housings, nor three, nor no housing, but in the case being reviewed, the invention will operate just as well with any of those alternatives. More troubling is the fact that the CAFC could just as easily have chosen any other component not important to the invention but advantageous to the defendant to read into the claim and there will be no infringement even though the accused infringer copied what the examiner and patentee agree upon as the patented invention.

K. Conclusion

The O.I. Corp – Senior Tech line of cases conflicts with this Court's decision in *Graver, supra* and the decision of the CAFC affirmed by this Court in *Markman, supra*. In

Graver, supra, this Court held that, if the language of the claim reads literally on the accused device there is infringement and that is the end of it. In *Markman*, *supra*, the CAFC informed what to do if the claim is too ambiguous to know if it reads literally on the accused device. The O.I. Corp – Senior Tech line of cases permits limitations to read from the specification into the claim to further limit a claim without considering if the claim can be read literally on the accused device.

There is literal infringement of claim 1 in this *Senior Tech IV* case and the rule in *Graver*, *supra* would have ended the matter if it were still the prevailing law. Under the holding of *Senior Tech IV*, an opportunity is provided to choose a result and then select a limitation that will provide that result. The erosion of the *Graver* test will lead to increased uncertainty on the part of counsel in advising their clients about infringement and on the part of Courts that must decide questions of infringement because of the absence of clear guidance as to when a limitation can be read from the specification into a claim.

In this case, an immaterial limitation construed into the claim was precluded from treatment under the doctrine of equivalents because it was construed to be in the claim and because the limitation was binary, i.e., either there is a housing or not. Both reasons evade the approach of *Festo VIII* and do not consider whether the tension between the notice function of claims and the reward provided for by Congress is resolved in the manner Congress intended, or in the manner contemplated by *Graver*, *supra* or in the manner applied throughout the years as explained in *Festo VIII*. The logic behind *Festo VIII* and

Graver, supra supports applying the doctrine of equivalents to prevent a trivial limitation from defeating the incentive purpose of the patent laws.

The questions presented by this petition need to be answered for the effective implementation of the patent laws, and the petitioner respectively requests that this writ be granted.

Respectfully submitted,

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NOTE: Pursuant to Fed. Cir., R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

00-1089, -1090

SENIOR TECHNOLOGIES, INC.,

Plaintiff-Appellant,

v.

R. F. TECHNOLOGIES, INC.,

Defendant-Cross Appellant.

DECIDED: September 17, 2003

(Filed Sep. 22, 2003)

Before CLEVENGER, *Circuit Judge*, SMITH, *Senior Circuit Judge*,* and BRYSON, *Circuit Judge*.

CLEVENGER, *Circuit Judge*.

Senior Technologies, Inc. ("Senior Tech") appealed a judgment in favor of one of its competitors, R.F. Technologies, Inc. ("R.F. Tech"), upon the conclusion of a bench trial

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* Senior Judge Smith heard oral argument in this case but because of illness was unable to participate in the disposition. This case was initially decided by the remaining judges in accordance with Fed. Cir. R. 47.11. Senior Judge Smith died on March 22, 2001. We continue to decide this case pursuant to Rule 47.11.

by the United States District Court for the District of Nebraska. On March 12, 2001, this court issued a ruling that affirmed the district court's conclusions of noninfringement, noninvalidity, and no inequitable conduct, and its denial of R.F. Tech's motion for attorneys' fees. *Senior Techs., Inc. v. R.F. Techs., Inc.*, No. 00-1089, -1090, 2001 U.S. App. LEXIS 4179 (Fed. Cir. Mar. 12, 2001) ("*Senior Tech III*"). Senior Tech petitioned the Supreme Court for review, and on June 3, 2002, the Court granted certiorari, vacated our decision, and remanded the case to this court for reconsideration in light of *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002) ("*Festo VIII*"). *Senior Techs., Inc. v. R.F. Techs., Inc.*, 535 U.S. 1108 (2002). Based on the Supreme Court's instruction, we have reconsidered this case and, once again, *affirm* the district court's judgment.

I

Because we have previously discussed the background of this patent dispute in detail, *Senior Tech III*, 2001 U.S. App. LEXIS 4179, at *2-5, we need not repeat it here. We provide only the relevant facts salient to the instant disposition.

As we explained in our previous opinion, Senior Tech has accused R.F. Tech of infringing claims 1 and 6 of U.S. Patent No. 4,682,155 ("the '155 patent"), which is directed to a monitoring system used in nursing homes and other care facilities to monitor patients or residents who have a tendency to wander. *Id.* at *2. Claim 1 calls for a "sensing module *including a receiving circuit and associated sensing means* located adjacent to the door opening to be monitored," while claim 6 requires "a receiving device for

mounting adjacent to the doorway including *a housing and a receiving circuit therein.*" *Id.* at *2-4 (emphases in original).

According to the patentee, four models of R.F. Tech's Code Alert products infringed the two asserted claims of the '155 patent: the CA9000, CA9100, CA9120, and CA600 models. The CA9000 model, first introduced in 1992, consisted of (1) an antenna mounted near a doorway, and (2) a "control unit," containing both the microprocessor and the preceding circuitry, located ideally at a distance of 10 feet from the door opening. *Id.* at *5. The later-introduced CA9100, CA9120, and CA600 models removed the preceding circuitry originally located in the control unit and placed that circuitry in the antenna mounted near the door, while leaving the microprocessor in the control unit. *Id.*

In *Senior Tech III,* we held that "the district court erred by not including the microprocessor in its comparison of the accused device with the construed 'receiving circuit.'" *Id.* at *11-12. The infringement analysis should have instead compared the "receiving circuit" claim term with the preceding circuitry and the microprocessor, together as a unit. *Id.*; *see also id.* at *17 ("As discussed above, both the microprocessor and the preceding circuitry corresponds [sic] to the limitation of 'receiving circuit' in the '155 patent."). However, we deemed the error harmless and affirmed the judgment of noninfringement on alternative grounds.

We first determined that the CA9100, CA9120, and CA600 models did not infringe the asserted claims because those devices did not satisfy the claims' "single housing" limitation either literally or by equivalents. *Id.* at *12-18. As a matter of claim construction, claim 1's "language,

specification, and prosecution history all indicate that the receiving circuit must be contained within the housing of the sensing module." *Id.* at *13-14. For similar reasons, we determined "that claim 6 is limited to a device in which a receiving circuit is located within a housing." *Id.* at *15. Based on these claim interpretations, we concluded that the accused CA9100, CA9120, and CA600 models did not literally infringe the asserted claims, because R.F. Tech had separated the preceding circuitry from the microprocessor and placed the two components of the "receiving circuit" in two different housings. *Id.* at *16-17. Then, invoking our now-vacated *Festo* opinion, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000) (en banc) (*Festo VII*), *vacated,* 535 U.S. 722 (2002), we held that "infringement under the doctrine of equivalents with regard to the CA9100, CA9120, and CA600 models is precluded." *Id.* at *17-18.

Having disposed of those three accused models, we further concluded that the fourth accused device, the CA9000 model, could not infringe the asserted claims. Addressing the alleged infringement of claim 1 by the CA9000 model, we determined that the proper construction of claim 1 required the "associated sensing means" to "be contained within the same housing as the receiving circuit," thus precluding any literal infringement since the antenna was in a different housing from the "receiving circuit." *Id.* at *19-21. Relying on the same construction, we then ruled that the CA9000 model could not infringe under the doctrine of equivalents, lest the application of that doctrine completely vitiated the single housing limitation of the "associated sensing means." *Id.* at *21-22. As to the alleged infringement of claim 6 by the CA9000 model, we determined that the accused device did not

infringe, literally or by equivalents, the "enable the receiving circuit" of claim 6, because the preceding circuitry could continuously receive signals without needing to be "enabled." *Id.* at *22-27.

Having concluded that the district court did not commit reversible error in its noninfringement determination, we turned to R.F. Tech's cross-appeal. On the merits of the cross-appeal, we determined that the district court correctly held that the claims in suit were not invalid or unenforceable, and that the trial court did not abuse its discretion in denying R.F. Tech's motion for attorneys' fees. *Id.* at *27-35.

II

Prosecution history estoppel stands "as a legal limitation on the doctrine of equivalents." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 30 (1997). Since this restriction on the doctrine of equivalents applies "only where claims have been amended for a limited set of reasons," *id.* at 32, prosecution history estoppel does not apply to claim construction, literal infringement analysis, or when there is no relevant amendment during the prosecution of the patent application. Consequently, our constructions of the disputed claim terms and our determinations of no literal infringement do not implicate prosecution history estoppel; they are therefore unaffected by the holding of *Festo VIII* and are restored in their entirety.

III

In *Festo VIII*, the Supreme Court vacated this court's en banc decision and established a new framework for

analyzing the interaction of the doctrine of equivalents and prosecution history estoppel. We must therefore determine whether the Court's holding affects our doctrine of equivalents analysis in this case.

A

In *Senior Tech III,* we held that "infringement under the doctrine of equivalents with regard to the CA9100, CA9120, and CA600 models is precluded" because amendments to the asserted claims during prosecution completely barred the application of the doctrine of equivalents. *Senior Tech III,* 2001 U.S. App. LEXIS 4179, at *17-18 (citing *Festo VII,* 234 F.3d 558). In light of *Festo VIII,* our conclusion based on that reasoning is no longer valid.

Although the underlying reasoning can no longer stand, the holding may nonetheless remain valid on other grounds. As we recently explained,

> [w]e do not interpret the Supreme Court's order in this case as requiring us to address the *Festo* issue or as precluding us from deciding the case on some other ground. Because the Court vacated our prior judgment affirming the district court's order . . . , the case on remand stands in the same posture as it did in the earlier appeal before our decision there. We think that all the Supreme Court intended was that, if we again considered the prosecution history estoppel point, we should do so in light of the Court's elucidation of that doctrine in its *Festo* opinion. There is no reason to believe, however, that the Supreme Court intended to require us on remand to limit our analysis to the theory we previously had followed. Indeed, our disposition of this appeal on grounds other than prosecution history estoppel

> literally complies with the Supreme Court's order in the sense that, "in light of *Festo*," we have "further considered" the case and concluded that the judgment of the district court should be affirmed on another ground.

Lockheed Martin Corp. v. Space Sys./Loral, Inc., 324 F.3d 1308, 1310-11 (Fed. Cir. 2003).

As in *Lockheed*, we have reconsidered the case and concluded that the judgment of the district court should be affirmed on another ground. That other ground is the patentee's implicit and necessary exclusion of a structural feature opposite from the claimed structure. *See Scimed Life Sys. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1345-47 (Fed. Cir. 2001). In *Scimed*, we explained that "because the scope of the claim was limited in a way that plainly and necessarily excluded a structural feature that was the opposite of the one recited in the claim, that different structure could not be brought within the scope of patent protection through the doctrine of equivalents." *Id.* at 1346. In other words, in a binary choice situation where there are only two structural options, the patentee's claiming of one structural option implicitly and necessarily precludes the capture of the other structural option through the doctrine of equivalents. *See id.* at 1345-46 (citing and discussing *Moore, U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091, 1106 (Fed. Cir. 2000); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1425 (Fed. Cir. 1997); *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1561 (Fed. Cir. 1997); *Dolly, Inc. v. Spalding & Evenflo Cos.*, 16 F.3d 394, 400 (Fed. Cir. 1994)). To illustrate, "if a patent states that the claimed device must be 'non-metallic,' the patentee cannot assert the patent against a metallic device on the ground that a

metallic device is equivalent to a non-metallic device." *Scimed,* 242 F.3d at 1347. If "metallic" were allowed to be the equivalent of "non-metallic," such approach would wholly vitiate the claimed "non-metallic" limitation and negate the "clear and binding statement to the public that metallic structures are excluded from the protection of the patent." *Id.*

In this case, as in *Scimed,* the patentee's choice of claim terms has plainly, necessarily, and implicitly excluded from the scope of the patent the embodiment it now seeks to capture through the doctrine of equivalents. In *Senior Tech III,* we ruled that the "receiving circuit" corresponded to the accused devices' unit composed of the microprocessor and preceding circuitry together. *Senior Tech III,* 2001 U.S. App. LEXIS 4179, at *9-12. We further determined, as a matter of claim construction, that the "receiving circuit" had to be in a single housing. *Id.* at *12-17.[1] Hence, the microprocessor and the preceding circuitry – the components of the "receiving circuit" in the accused devices – have to be in the same housing for infringement to attach. That was not the case however. "[I]n the CA9100, CA9120, and CA600, the circuitry preceding the microprocessor was removed and placed in the antenna unit mounted near the door, while the microprocessor remained in the control unit." *Id.* at *17. Because the elements corresponding to the "receiving circuit" in those three models were not in the same housing, those three devices could not infringe literally. Nor could they infringe under the doctrine of equivalents, since the patentee's

[1] In its petition for rehearing to this court after the issuance of *Senior Tech III,* Senior Tech did not challenge either of these rulings.

decision to claim a "receiving circuit" located in the "same housing" necessarily and implicitly excluded from the scope of equivalents an embodiment of the "receiving circuit" which is *not* located in the "same housing." Were we to allow a finding of infringement by equivalents despite the two distinct and separate housings for the elements of the "receiving circuit," we would permit the vitiation and deletion of the claimed "same housing" limitation. If we upheld such a finding, we would impermissibly allow the doctrine of equivalents "such broad play as to effectively eliminate that element in its entirety." *Warner-Jenkinson,* 20 U.S. at 29. Because such a result is repugnant to Supreme Court and Federal Circuit precedent, we again hold that the CA9100, CA9120, and CA600 models do not infringe claims 1 and 6 of the '155 patent under the doctrine of equivalents. In light of this ruling, we do not need to reach the issue of prosecution history estoppel. *See Lockheed,* 324 F.3d at 1321-22.

B

In *Senior Tech III,* we analyzed the alleged infringement by the CA9000 model separately from the other three models. In that analysis, we did not rely on prosecution history estoppel, and accordingly did not implicate *Festo VIII. See Senior Tech III,* 2001 U.S. App. LEXIS 4179, at *19-27. Instead, we reached that conclusion based on the patentee's necessary and implicit exclusion of the embodiment it sought to capture through the doctrine of equivalents. *See Scimed,* 242 F.3d at 1346-47.

Applying the well-settled rule summarized in *Scimed* to the alleged infringement of claim 1 by the CA9000 model, we explained that "an attempt to expand the scope

of claim 1 under the doctrine of equivalents to encompass the accused devices, which have antennae located outside of the receiving circuit's housing, would *eviscerate* the construed limitation that they [the antenna and the receiving circuit] be contained within the housing." *Senior Tech III,* 2001 U.S. App. LEXIS 4179, at *21 (emphasis added). In other words, a finding of infringement under the doctrine of equivalents, despite the fact that the CA9000 model's antenna was located outside of the receiving circuit's housing, would vitiate the requirement that the antenna (corresponding to the "associated sensing means") be located in the same housing as the receiving circuit. Such a finding would impermissibly delete an express limitation from the claims and abrogate the notice function of the patent claims.

The same principle also compelled a conclusion that the CA9000 model could not infringe claim 6 under the doctrine of equivalents. Properly construed, claim 6 required "total enablement," i.e. "unless the receiving circuit has been 'enabled,' it [the invention] is inoperative with respect to all of its functions – receiving signals, responding to them, or producing an output response." *Id.* at *24. Under the settled rule of *Scimed,* the patentee's decision to require "total enablement" in claim 6 necessarily and implicitly excluded the opposite of that requirement (non-enablement) from the scope of equivalents. *See Scimed,* 242 F.3d at 1346-47. Yet, the patentee essentially asserted that a structure that required no enablement actually infringed the "total enablement" limitation by equivalents. *See Senior Tech III,* 2001 U.S. App. LEXIS 4179, at *26 (explaining that "the structure in the accused products corresponding to the 'receiving circuit' in the '155 patent d[id] not have to be 'enabled,' as claim 6 require[d],

in order to receive transmitted signals."). The patentee's assertion cannot prevail however, because infringement of a claim requiring "total enablement" by an accused device that did not need to be enabled would contravene both the notice function of the claims and settled Supreme Court case law. *See Scimed,* 242 F.3d at 1346-47. Consequently, the CA9000 model could not infringe claim 6 under the doctrine of equivalents.

In sum, we reaffirm our initial conclusion that the CA9000 device did not infringe either claim 1 or claim 6 under the doctrine of equivalents.

IV

As mandated by the Supreme Court, we have reconsidered our original decision in this case in light of *Festo VIII.* Based on this reconsideration and as explained above, we again hold that none of the accused products infringe the asserted claims either literally or under the doctrine of equivalents. We therefore affirm the district court's judgment of noninfringement. Moreover, for the reasons explained in our original opinion, we also affirm the district court's ruling that the patent in suit is not invalid or unenforceable and that R.F. Tech was not entitled to attorneys' fees.

Supreme Court of the United States

***No.* 01-35**

SENIOR TECHNOLOGIES, INC.,

Petitioner

v.

R. F. TECHNOLOGIES, INC.

ON WRIT OF CERTIORARI to the United States Court of Appeals for the Federal Circuit

THIS CAUSE having been submitted on the petition for a writ of certiorari and response thereto,

ON CONSIDERATION WHEREOF, it is ordered and adjudged by this Court that the judgment of the above court in this cause is vacated with costs, and the case is remanded to the United States Court of Appeals for the Federal Circuit for further consideration in light of *Festo Corporation* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. ___ (2002).

IT IS FURTHER ORDERED that the petitioner Senior Technologies, Inc. recover from R. F. Technologies, Inc., Three Hundred Dollars ($300.00) for costs herein expended.

June 3, 2002

Clerk's costs $300.00

United States Court of Appeals
for the Federal Circuit

ORDER

(Filed Apr. 5, 2001)

Before CLEVENGER, Circuit Judge, and BRYSON, Circuit Judge.

A petition for rehearing having been filed by the APPELLANT,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED.

The mandate of the court will issue on April 12, 2001.

FOR THE COURT,

/s/ Jan Horbaly
Jan Horbaly
Clerk

Dated: April 5, 2001

cc: Roger D. Greer
Jane C. Schlicht

SENIOR TECH V R.F. TECH, 00-1089, -1090
(DCT – 97-CV-3241)

* *
* Note: Pursuant to Fed. Cir. R. 47.6, this order *
* is not citable as precedent. It is a public record. *
* *

NOTE: Pursuant to Fed. Cir., R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

00-1089, -1090

SENIOR TECHNOLOGIES, INC.,

Plaintiff-Appellant,

v.

R. F. TECHNOLOGIES, INC.,

Defendant-Cross Appellant.

DECIDED: March 12, 2001

Before CLEVENGER, *Circuit Judge*, SMITH, *Senior Circuit Judge*,* and BRYSON, *Circuit Judge*.

CLEVENGER, *Circuit Judge*.

Senior Technologies, Inc. ("Senior Tech") appeals a decision of noninfringement in favor of one of its competitors, R.F. Technologies, Inc. ("R.F. Tech") upon the conclusion of a bench trial by the United States District Court for the District of Nebraska. *See Senior Tech., Inc. v. R.F.*

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* Senior Judge Smith heard oral argument in this case but because of illness was unable to participate in the disposition. This case was decided by the remaining judges in accordance with Fed. Cir. R. 47.11.

Tech., 58 F. Supp. 2d 1076 (D. Neb. 1999). R.F. Tech cross-appeals the district court's ruling on the issues of claim definiteness, invalidity, inequitable conduct, and attorneys' fees. Because the district court's conclusion of noninfringement was correct with respect to each of R.F. Tech's Code Alert products, and since it did not commit reversible error in its treatment of any of the remaining issues, we *affirm*.

I

Senior Tech is the holder of U.S. Patent No. 4,682,155 ("the '155 patent"), entitled "Personnel Security System," which issued on July 21, 1987. The '155 patent is generally directed to a wanderer monitoring system which can be used in nursing homes, hospitals, assisted living centers, and other care facilities to monitor patients or residents who have a tendency to wander. The invention provides for the sounding of an alarm when a resident attempts to leave the facility, thereby alerting staff members so that appropriate action can be taken.

Two independent claims of the '155 patent, claims 1 and 6, are alleged by Senior Tech to be infringed by products made by R.F. Tech. These claims read in relevant part with emphases added to highlight the disputed terms:

1. A security sensing system for monitoring the passage of persons through a door or like opening comprising:

   [1] *a transmitter module* for installing on persons to be monitored, [2] *a sensing module* for installing adjacent to a door opening to be monitored, and [3] *means responsive to the opening of the door to enable the sensing module* to respond

to the signal transmitted by the transmitter module to produce an output response, and [4] *alarm means* energizable in response to the production of the output response to produce an alarm condition,

. . . .

the sensing module *including a receiving circuit and associated sensing means* located adjacent to the door opening to be monitored, and

said means responsive to the opening of the door including means *to enable the receiving circuit in the sensing module* whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response for energizing the alarm means.

'155 patent, col. 8, line 57 through col. 9, line 13 (emphasis added).

6. Means to monitor a doorway of a nursing home or other institution in order to produce an alarm when certain residents try to pass therethrough comprising

a transmitter device. . . .

a receiving device for mounting adjacent to the doorway including [1] *a housing and a receiving circuit therein,* [2] a signal sensor operatively connected to the receiving circuit, [3] means for supplying power to the receiving circuit, [4] means *to enable the receiving circuit*, and [5] an output for the receiving circuit,

an alarm producing device operatively connected to the output of the receiving circuit, and

> said means to enable including switch means operatively connected to the receiving circuit . . . the switch means operating *to enable the receiving circuit.*

'155 patent, col. 9, lines 31-53 (emphasis added).

In general terms, the invention of the '155 patent begins with a transmitter, typically worn on the wrists or ankles of a person being monitored. The transmitter continuously transmits a signal that, if within range, can be received by the antenna of a fixed unit mounted near a door opening. Contained within the housing of the fixed unit is what the '155 patent refers to as "a receiving circuit." The function of the receiving circuit is to take the signal picked up by the antenna, and, depending on whether or not the door being monitored is open, generate an output signal that sounds an alarm.

R.F. Tech engages in the business of designing, engineering, manufacturing, and selling a variety of medical monitoring equipment, including wanderer monitoring systems. Since 1992, it has sold wanderer monitoring systems under the trademark "Code Alert." Four models of the Code Alert products are the subject of this suit: the CA9000, CA9100, CA9120, and CA600.

All of the Code Alert products associated with this litigation involve transmitters to be worn by those persons being monitored. In addition, the CA9000, first introduced in 1992, included an antenna mounted near a doorway, a control unit containing a microprocessor and additional circuitry, and a door switch connected to the control unit's microprocessor. The CA9100, introduced in 1994, differed from the CA9000 in that the circuitry located originally in the control unit was removed and placed in the antenna

mounted near the door. The microprocessor, however, remained in the control unit. The CA9120 and the CA600, introduced in 1995 and 1998 respectively, possessed the same relevant features as the CA9100 for purposes of this appeal.

II

An infringement analysis is "a two-step process in which we first determine the correct claim scope, and then compare the properly construed claim to the accused device to determine whether all of the claim limitations are present either literally or by a substantial equivalent." *Renishaw PLC v. Marposs Societa' Per Azioni,* 158 F.3d 1243, 1247-48, 48 USPQ2d 1117, 1120 (Fed. Cir. 1998). We review the first step of claim construction without deference to the district court. *Id.*; *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1455, 46 USPQ2d 1169, 1173 (Fed. Cir. 1998) (*en banc*). When infringement is tried to the bench, we review the second step of comparing the properly construed claim to the accused device for clear error. *See Young Dental Mfg. Co. v. Q3 Special Prods., Inc.,* 112 F.3d 1137, 1141, 42 USPQ2d 1589, 1592 (Fed. Cir. 1997).

In properly determining the scope and meaning of a claim it is well-settled that the court should first look to the intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the written description and, if in evidence, the prosecution history. *See Markman v. Westview Instruments, Inc.,* 52 F.3d 967, 979-80, 34 USPQ2d 1321, 1329-30 (Fed. Cir. 1995). Such intrinsic evidence is the most significant source for determining the operative meaning of disputed claim language. Among these sources, the claim language itself is always the starting point of

claim construction. *See Johnson Worldwide Associates, Inc. v. Zebco Corp.,* 175 F.3d 985, 989, 50 USPQ2d 1607, 1610 (Fed. Cir. 1999). Terms in the claim are to be given their ordinary and accustomed meaning to a person of ordinary skill in the relevant art. *See Renishaw,* 158 F.3d at 1249, 48 USPQ2d at 1121. However, an exception arises when either "a different meaning is clearly set forth in the specification or where the accustomed meaning would deprive the claim of clarity." *Northern Telecom Ltd. v. Samsung Elec. Co.,* 215 F.3d 1281, 1287, 55 USPQ2d 1065, 1069 (Fed. Cir. 2000); *see also Johnson Worldwide,* 175 F.3d at 990, 50 USPQ2d at 1610. Furthermore, one may look to the written description to define a term in the claims, for "a claim must be read in view of the specification of which it is a part." *Renishaw,* 158 F.3d at 1248, 48 USPQ2d at 1120. However, one should avoid reading a limitation into a claim from the written description, and, in so doing, restricting its scope unduly. *Id.* Finally, statements and amendments contained in the prosecution history can often inform one's construction of a claim, particularly if they were made for reasons of patentability. *See Biodex Corp. v. Loredan Biomedical, Inc.,* 946 F.2d 850, 862-63, 20 USPQ2d 1252, 1262 (Fed. Cir. 1991) (affirming the use of prosecution history to construe a claim).

To infringe, an accused device must embody every limitation in the claim, either literally or under the doctrine of equivalents. *See Zelinski v. Brunswick Corp.,* 185 F.3d 1311, 1316, 51 USPQ2d 1590, 1593 (Fed. Cir. 1999); *see also American Permahedge v. Barcana, Inc.,* 105 F.3d 1441, 1445, 41 USPQ2d 1614, 1618 (Fed. Cir. 1997). However, the application of the doctrine of equivalents is limited by the doctrine of prosecution history estoppel,

which bars a patentee from asserting as an equivalent subject matter previously surrendered during the prosecution of the patent application. *Southwall Techs., Inc. v. Cardinal IG Co.,* 54 F.3d 1570, 1579, 34 USPQ2d 1673, 1679 (Fed. Cir. 1995). Furthermore, a narrowing amendment made for any reason related to the statutory requirements for a patent will trigger prosecution history estoppel with respect to the amended claim element. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.,* No. 95-1066, 2000 U.S. App. LEXIS 29979, at *16 (Fed. Cir. Nov. 29, 2000) (*en banc*). Finally, when a claim amendment creates prosecution history estoppel, there is no range of equivalents available for the amended claim element. *Id.* at *25.

A

The first issue is whether the district court correctly treated the phrase "receiving circuit" in its claim construction and in its comparison of the construed claims to the accused device.

Senior Tech's lead argument on appeal is that the district court erred in "construing" the receiving circuit so as to encompass circuitry in the accused Code Alert products which (1) produces no output signal to energize an alarm, and (2) is not connected to a door switch, an interpretation "which contradicts language explicitly recited in the claims themselves." Senior Tech contends that the district court should not have excluded the Code Alert microprocessor from the part of the accused product that would be compared against the "receiving circuit" limitation in the '155 patent. Technically, Senior Tech's contention is not an attack on the district court's claim

construction. Rather, the challenge relates to the second step of the infringement analysis, namely, that the district court committed clear error in its comparison of the construed claims to the accused device. Hence, the district court's construction of "receiving circuit" as it relates to claims 1 and 6 of the '155 patent is not in genuine dispute, and need not be reviewed by us.

In defining "receiving circuit" and its functions in terms of Fig. 4 of the specification, the district court made the following findings:

> The receiving circuit disclosed in the '155 Patent which is located in the sensing module consists of the AM radio, signal limiter, tone decoder, initial power turn-on delay, low-frequency filter, output stage, and lead 67. In Fig. 4, the receiv[ing circuit] extends to the left of the point where resistor 136, diode 138, and the unnumbered relay contact directly above the connect. The principal function of the receiving circuit 14 is to accept an input signal received from the wanderer's transmitter, process its signal in the successive stages of the receiver, and deliver that signal through the transistor 112 to an output stage to produce a response to energize the alarm.

Senior Tech, 58 F. Supp. 2d at 1082.

Given this definition of "receiving circuit" and its functions, we must turn to the district court's comparison of the '155 patent's "receiving circuit" with a corresponding part in the accused products. After reviewing the evidence before the district court, we are convinced that it committed clear error when it failed to include the microprocessor within the relevant portion of the Code Alert products that

ought to be compared against the '155 patent's "receiving circuit."

In its opinion, the district court labeled, without any explanation, the circuitry preceding the microprocessor in the Code Alert device as "a receiving circuit." *See Senior Tech,* 58 F. Supp. 2d at 1083 (Finding of Fact No. 18). However, the district court's own findings indicate that the principal functions of the receiving circuit are to (1) accept an input signal received from a transmitter of a monitored person, (2) process its signal in successive stages, and (3) deliver that signal to an output stage to produce a response to energize an alarm. The above functions indicate that the microprocessor, whose output is connected to an alarm, should have properly been included in the portion of the accused device that would be compared against the "receiving circuit" in the '155 patent.

Therefore, the district court erred by not including the microprocessor in its comparison of the accused device with the construed "receiving circuit." When the functions of the microprocessor are properly understood, and the claim is read on those functions, the presence of the microprocessor in the accused device provides no ground for noninfringement of the claims.

We must, however, also determine whether the district court's conclusion of noninfringement can be affirmed on alternative grounds present in the record before us. *See MEHL/Biophile Int'l Corp. v. Milgraum,* 192 F.3d 1362, 1366, 52 USPQ2d 1303, 1306 (Fed. Cir. 1999) (" '[A]ppellees always have the right to assert alternative grounds for affirming the judgment that are supported by the record.' " (quoting *Datascope Corp. v. SMEC, Inc.,* 879

F.2d 820, 822 n.1, 11 USPQ2d 1321, 1322 n.1 (Fed. Cir. 1989)).

B

Another issue before the district court was whether the '155 patent disclosed a limitation of a single housing within which lies the receiving circuit. As a matter of law, we conclude that both claims 1 and 6 do include such a limitation.

Claim 1 describes a monitoring system that includes a "sensing module for installing adjacent to a door opening to be monitored." This sensing module, according to the claim, "includ[es] a receiving circuit and associated sensing means." Furthermore, claim 1 mentions a "means to enable the receiving circuit *in the sensing module*. . . . " (emphasis added). Based on the language of the claim, one must conclude that the receiving circuit must be contained within the sensing module. This position is consistent with the text and figures in the written description. Although the specification refers to the physical sensing module as a "housing," it is clear that the receiving circuit is located within it:

> The switch 168 is connected by leads 170 and 172 to a housing 174 in which the receiver circuit 14 is located. The housing 174 has an output cable 176 which connects it to a remote nursing station. . . .

'155 patent, col. 8, lines 8-11. Furthermore, the prosecution history reveals that, in order "to clarify ambiguities," claim 1 was amended such that "the receiving circuit" would be specifically located "in the sensing module." Hence, the claim language, specification, and prosecution

history all indicate that the receiving circuit must be contained within the housing of the sensing module.

Claim 6 similarly describes a monitoring system that requires "a housing and a receiving circuit therein." According to the plain meaning of the claim language, claim 6 clearly states the requirement of a separate housing structure within which lies a receiving circuit. Moreover, the same passage from the specification mentioned above confirms this interpretation in that the "switch 168 is connected by leads 170 and 172 to *a housing 174 in which the receiv[ing] circuit is located.*" *Id.* (emphasis added). Finally, the prosecution history reveals that originally, claim 6 merely listed "a housing" and "a receiving circuit" as the first two of several elements comprising the "receiving device." Had the claim been left unamended, one could argue that the claim language contains no requirement for the receiving circuit to be located within a housing. The list, however, was specifically amended to combine the first two elements into one by changing the language to read "a housing and a receiving circuit therein." Faced with such an explicit amendment, the appellant cannot now argue that claim 6 does not require a housing within which lies a receiving circuit. Thus, the claim language, the specification, and the prosecution history all indicate that claim 6 is limited to a device in which a receiving circuit is located within a housing.

The appellant nevertheless contends that it was improper for the district court to "construe claim 6 as requiring a separate sensing module and receiving circuit that are contained in a single housing." The appellant, however, misinterprets the thrust of the district court's conclusion. As we read its opinion, the district court was not requiring a separate sensing module and a receiving

circuit to be contained within a single housing. Rather, it was merely noting that the receiving circuit in the accused product did not literally infringe claim 6 because it was not contained in the housing of the "sensing module" (*i.e.*, the housing of the "receiving device"). Perhaps the district court could have been more precise in its choice of words when it used the phrase, "housing of the sensing module," rather than, more accurately, "housing of the receiving device." However, given the fact that "sensing module" is not mentioned anywhere in the claim, we can justifiably conclude that the district court was not attempting to import an additional limitation of a "separate sensing module." Rather, it was simply referring to the housing of the "receiving device" in claim 6. Furthermore, the context clearly shows that the district court was addressing the infringement issue as to claim 6, not claim 1. Hence, we find no inconsistencies between the district court's statements and an interpretation of claim 6 that requires a "receiving device" that includes "a housing and a receiving circuit therein."

Having properly construed claims 1 and 6 to require a single housing within which lies a receiving circuit, we must review the district court's comparison of the construed claim to the accused device. As to claim 1, the district court found that "the accused products do not have a sensing module with the components described in the claim. . . . " *Senior Tech,* 58 F. Supp. 2d at 1089. As to claim 6, the district court concluded that the Code Alert products did not literally infringe because "the receiving circuit which responds to signals to produce a response is not contained in the housing of the sensing module." *Id.*

Contrary to the district court's determination, the CA9000 model could arguably meet the single housing

requirement since the microprocessor and the preceding circuitry can be found in the same housing (*i.e.*, the control unit). However, in the CA9100, CA9120, and CA600, the circuitry preceding the microprocessor was removed and placed in the antenna unit mounted near the door, while the microprocessor remained in the control unit. As discussed above, both the microprocessor and the preceding circuitry corresponds to the limitation of "receiving circuit" in the '155 patent. By splitting the microprocessor and the preceding circuitry between two housings (*i.e.*, the control unit and the antenna unit), these Code Alert products ceased to literally embody the single housing limitation of claims 1 and 6.

As far as infringement under the doctrine of equivalents is concerned, both claims 1 and 6 were amended to overcome a rejection under 35 U.S.C. § 112, ¶ 2 (1994). Claim 1 was amended such that the receiving circuit is "in the sensing module," whereas claim 6 was amended to involve "a housing and a receiving circuit therein." Therefore, infringement under the doctrine of equivalents with regard to the CA9100, CA9120, and CA600 models is precluded. *See Festo Corp.*, 2000 U.S. App. LEXIS 29979, at *25.

In light of the foregoing analysis, we can immediately affirm the district court's finding of noninfringement of claims 1 and 6 with respect to the CA9100, CA9120, and CA600. However, since the CA9000 could arguably meet the single housing requirement, we must continue to determine whether this last remaining model could be found to infringe either claim 1 or 6.

C

A limitation not clearly addressed by the district court was the location of the "associated sensing means" in claim 1. As a matter of law, we conclude that the "associated sensing means" in claim 1 must be located within the same housing as the receiving circuit.

As discussed above, we have already construed claim 1 to contain a limitation that requires the receiving circuit to be contained within the housing of the sensing module. Since the sensing module is defined as "including a receiving circuit and associated sensing means," there is no reason for us not to conclude that the associated sensing means must also be contained within that same housing. The written description in the specification reinforces this view by providing that the associated sensing means, comprised of two ferrite inductors, be "connected to a jack 86 for an external sensor. . . . " '155 patent, col. 6, lines 59-63. This language implies that the associated sensing means must be "internal," as opposed to an "external sensor." Finally, the only indication of anything remotely similar to an external associated sensing means can be found in the illustrations in the '155 patent, where an elongated sensing strip is shown to be connected to the sensing module in Figures 6 and 7. However, the specification makes clear that the sensor strip is used in an alternative embodiment of the invention for a double door opening. '155 patent, col. 8, lines 24-36. This alternative embodiment is described in dependent claim 4 as:

> The security sensing system of claim 1 wherein the door opening accommodates two door members and the sensing module is located adjacent to the door opening and includes *an elongated sensing member* mounted extending transversely

> across at least one of the door members in the door opening.

The doctrine of claim differentiation requires us to consider the "elongated sensing member" found in claim 4 and the "associated sensing means" found in claim 1 to be distinct from one another. Otherwise, one or the other would be rendered superfluous. *See Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187, 48 USPQ2d 1001, 1005 (Fed. Cir. 1998) (holding that under the doctrine of claim differentiation, a claim should not ordinarily be construed in a manner that renders a related dependent claim superfluous). Hence, we conclude that although alternative embodiments may involve external sensor strips, the "associated sensing means" in claim 1 must be contained within the same housing as the receiving circuit.

Having construed claim 1 so as to require the "associated sensing means" to be located within the same housing as the receiving circuit, we return to the sole remaining accused product, the CA9000, to determine whether the district court's determination of noninfringement was correct. It is undisputed that the CA9000's antenna, the only part in the accused product that corresponds to the "associated sensing means" in claim 1, is not contained within the same housing as the receiving circuit. As found by the district court, the antenna was mounted adjacent to the door, whereas the part of the accused product corresponding to the '155 patent's "receiving circuit" was located in a control unit mounted elsewhere. Hence, the antenna and receiving circuit are not literally contained within the same housing as required by claim 1.

Furthermore, we find that an attempt to expand the scope of claim 1 under the doctrine of equivalents to encompass the accused devices, which have antennae located outside of the receiving circuit's housing, would eviscerate the construed limitation that they be contained within the housing. Hence, by requiring the "associated sensing means" to be contained within the same housing as the receiving circuit, claim 1 excludes from its scope antennae located outside of the housing. *See, e.g., Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581, 1582-83, 37 USPQ2d 1365, 1372, 1373-74 (Fed. Cir. 1996) (holding that a device "with only two offset distances" was "specifically excluded from the scope of the claims" because the relevant claim had been construed to require the "offset distance [to] take on at least three values"). Therefore, Senior Tech cannot utilize the doctrine of equivalents to reach the Code Alert products, and we must affirm the district court's conclusion of noninfringement of CA9000, both literally and under the doctrine of equivalents, with regards to claim 1.

We are, however, not finished with the issue of infringement. We must determine whether the CA9000 can be found to infringe claim 6 of the '155 patent, which requires us to address the last claim construction issue.

D

The remaining issue of claim construction relates to the phrase "to enable the receiving circuit" in both claims 1 and 6. The language in the two claims contains subtle differences, and hence, will be analyzed separately. In short, we construe claim 1 to disclose an embodiment in which only the receiving circuit's output is enabled

("partial enablement"), whereas claim 6 discloses an embodiment in which the entire receiving circuit is enabled ("total enablement"), including its receiving function.

The district court construed "enable" so that both claims 1 and 6 "disclose a receiving circuit that can receive signals when the door is open, but cannot when the door is closed." *Senior Tech,* 58 F. Supp. 2d at 1088. We conclude that the district court's construction was correct as to claim 6, but not as to claim 1.

Claim 6 contains the language "to enable the receiving circuit" in two places. '155 patent, col. 9, lines 43-44, 53. However, in each instance, the phrase exists in bare form and is not qualified by additional limitations. The situation is strikingly different with claim 1. There, as in claim 6, phrases containing the critical word "enable" appear twice. However, in each instance, the phrase is qualified by additional limitations. In the first mention, "to enable the sensing module" is qualified by "to respond to the signal transmitted by the transmitter to produce an output response." *Id.*, col. 8, lines 63-66 (emphasis added). In the second mention, "to enable the receiving circuit in the sensing module" is qualified by "whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response. . . . " *Id.*, col. 9, lines 9-12. Hence, by virtue of the plain language of the claims, what is being enabled in claim 1 appears to be different than what is being enabled in claim 6.

The specification likewise seems to imply that the receiving circuit can be "enabled" in two different ways. On the one hand, the schematic in Figure 4 and the corresponding description support the notion that the invention involves partial enablement, *i.e.*, that part of the

receiving circuit can constantly receive signals, but another part must be "enabled" to respond and to produce an output response.[1] On the other hand, the specification contains several passages clearly indicating that the invention involves total enablement. That is, unless the receiving circuit has been "enabled," it is inoperative with respect to all of its functions -- receiving signals, responding to them, or producing an output response.[2] Although the apparent inconsistencies in the specification gives us cause for some concern, we are persuaded that we should attempt to construe the claims to preserve the patent's validity. *See Modine Mfg. Co. v. United States Int'l Trade Comm'n,* 75 F.3d 1545, 1557, 37 USPQ2d 1609, 1617 (Fed. Cir. 1996) ("When claims are amenable to more than one construction, they should when reasonably possible be interpreted so as to preserve their validity."). Hence, in an attempt to reconcile the internal inconsistencies of the patent specifications, we construe claim 1, with its additional limitations, to require partial enablement, whereas

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[1] The district court recognizes this notion in its findings of fact number 16, where it states, "[t]he door switch electrically disconnects the left-hand part of the receiving circuit from the right-hand part of the receiving circuit. While the left hand is still operating, the right hand is inoperable, or disabled." *Senior Tech,* 58 F. Supp. 2d at 1082-83. Hence, while it is apparent that "transistor 112 can receive no signal when the door is closed," *id.*, the receiving circuit as a whole can indeed receive signals transmitted by the transmitters worn by the wanderers.

[2] In its written description, the '155 patent indicates in no less than four passages that the receiving circuit cannot receive signals from the transmitter until the door is open. *See* '155 patent, col. 1, lines 55-58; col. 3, lines 52-55; col. 4, lines 39-44; col. 8, lines 14-16. Hence, the textual language of the written description indicates that the device is unable to receive signals without it being first enabled.

claim 6, with its unqualified language, to require total enablement.

Although the district court erred in its construction of claim 1 so as to require total enablement of the receiving circuit, we conclude that it was harmless error in light of our earlier conclusion that none of the Code Alert products could be found to infringe claim 1. On the other hand, even though the district court's construction of the enablement limitation was proper with respect to claim 6, we must still decide whether its subsequent determination of noninfringement as to that claim was correct.

There is no dispute that in all of the Code Alert products, the circuitry preceding the microprocessor can continuously receive signals. *See Senior Tech,* 58 F. Supp. 2d at 1083 ("The receive antenna and receiver continuously receive signals and the microprocessor continuously analyzes received signals to determine if a valid signal from a transmitter is received and if a monitored door is open."). Hence, the structure in the accused products corresponding to the "receiving circuit" in the '155 patent does not have to be "enabled," as claim 6 requires, in order to receive transmitted signals. Therefore, it cannot be said that the district court committed clear error when it concluded that the CA9000, along with the rest of the Code Alert products, did not infringe Claim 6, either literally or under the doctrine of equivalents. Therefore, we affirm the district court's conclusion of noninfringement of claim 6 with respect to the remaining Code Alert product, the CA9000.

III

With respect to the cross-appeal issues, R.F. Tech challenges the district court's conclusion on the issues of claim definiteness, invalidity, inequitable conduct, and attorneys' fees.

A

R.F. Tech's claim definiteness argument is based on the fact that the specification appears to contain some internal inconsistencies. Whether the claim definiteness requirement is met in a particular patent is freely reviewable on appeal as a question of law. *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). As discussed above, we have resolved the inconsistencies by pointing out the different requirements of the respective "enablement" limitations in claims 1 and 6. Therefore, as a matter of law, we hold that the specification does not fail to satisfy the claim definiteness requirement as codified in 35 U.S.C. § 112, ¶ 2 (1994).

B

R.F. Tech also challenges the district court's finding that it failed to prove by clear and convincing evidence that the '155 patent was invalid pursuant to 35 U.S.C. § 102(b) (1994).

Pursuant to 35 U.S.C. § 102(b), an inventor is not entitled to patent his invention if it is described in a printed publication, is placed in public use, or is on sale in the United States more than one year prior to the date of application for the patent. Whether an invention was described in a printed publication, in public use, or on sale

within the meaning of section 102(b) is a question of law that this court reviews *de novo*. *See Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 549, 16 USPQ2d 1587, 1591 (Fed. Cir. 1990). Factual findings underlying the district court's legal conclusion, on the other hand, are subject to the clearly erroneous standard of review. Fed. R. Civ. P. 52(a). A conclusion that a section 102(b) bar invalidates a patent must be based on clear and convincing evidence, *Manville Sales*, 917 F.2d at 549, 16 USPQ2d at 1591, and must be drawn in light of the "totality of the circumstances." *Id.* at 549, 16 USPQ2d at 1591; *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1266, 229 USPQ 805, 808 (Fed. Cir. 1986).

The printed publication at issue is a *St. Louis Post-Dispatch* article, published on July 5, 1984, generally describing an early high frequency prototype system that was installed in a nursing facility. According to the article, "[a] wristwatch-size radio transmitter is fixed to the patient's arm or leg. When the patient approaches a door, the transmitter's signal is picked up by a special receiver attached to the door. When the door is opened, an alarm is sounding in a nursing station. . . . " *Senior Tech*, 58 F. Supp. 2d at 1085. The article does no more than give a general description of the basic functionality of a wanderer system. We discern no error in the district court's finding "that the Post-Dispatch article does not sufficiently describe the system such that a person of ordinary skill could devise the invention without undue experimentation." *Senior Tech*, 58 F. Supp. 2d at 1093.

The district court also determined in its findings of fact that the inventor "did not add a door switch to his invention until March or April of 1985." *Id.* at 1086. Although there was conflicting testimony from the parties'

witnesses, we cannot say that the district court clearly erred in its finding. Given that door switches were not added until March or April of 1985, the prototype systems that were installed in nursing homes prior to the critical date lacked door switches. Therefore, the invention disclosed by the '155 patent was not in public use nor on sale pursuant to section 102(b).

C

R.F. Tech likewise challenges the district court's finding that it failed to establish inequitable conduct with regard to the prosecution of the '155 patent.

At issue is the patentee's failure to disclose two potential prior art references: (1) the *St. Louis Post-Dispatch* article, dated July 5, 1984, which reported the success of a prototype system in a field test, and (2) the fact that early versions of the claimed invention were installed in two nursing homes prior to the critical date of January 13, 1985.

It is inequitable conduct to withhold material information from a patent examiner or to submit false material information with the intent to deceive or mislead the examiner into granting a patent. *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1178, 33 USPQ2d 1823, 1826 (Fed. Cir. 1995). Inequitable conduct is an equitable issue committed to the discretion of the district court. Therefore, we review the district court's determination for abuse of discretion. *See Elk Corp. v. GAF Bldg. Materials Corp.*, 168 F.3d 28, 30, 49 USPQ2d 1853, 1855 (Fed. Cir. 1999). The determination of inequitable conduct requires a two-step analysis. The first step requires the trial court to determine (1) whether the withheld reference meets a threshold level of

materiality, and (2) whether the evidence shows a threshold level of intent to mislead the PTO. *See Baxter Int'l, Inc. v. McGaw, Inc.*, 149 F.3d 1321, 1327, 47 USPQ2d 1225, 1228-29 (Fed. Cir. 1998); *Halliburton Co. v. Schlumberger Tech. Corp.*, 925 F.2d 1435, 1439, 17 USPQ2d 1834, 1838 (Fed. Cir. 1991). These threshold issues must be proven by clear and convincing evidence, and the district court's determinations concerning them are reviewed under the clearly erroneous standard and will not be disturbed unless this court has a "definite and firm conviction that a mistake has been committed." *Elk Corp.*, 168 F.3d at 30, 49 USPQ2d at 1855; *see also Kingsdown Med. Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 872, 9 USPQ2d 1384, 1389 (Fed. Cir. 1988) (*en banc*).

The district court determined that both references met the required threshold level of materiality. However, it concluded that the inventor had no intent to deceive the PTO because it was "unclear that [the inventor] knew about the existence of the newspaper article during the pendency of the patent application, or even if he did, that he appreciated its potential significance." *Senior Technologies, Inc.*, 58 F. Supp. 2d at 1086. R.F. Tech offers as evidence the inventor's knowledge of the existence of prior systems based on having installed them and urges us to find intent based on the materiality of the omissions. Since "'[i]nequitable conduct' is not, or should not be, a magic incantation to be asserted against every patentee," nor is an "allegation established upon a mere showing that art or information having some degree of materiality was not disclosed," *FMC Corp. v. Manitowoc Co.*, 835 F.2d 1411, 1415, 5 USPQ2d 1112, 1115 (Fed. Cir. 1987), we do not find that the evidence offered by R.F. Tech is sufficient to

conclude that the district court abused its discretion in finding no inequitable conduct.

D

R.F. Tech's last contention relates to the award of reasonable attorneys' fees under 35 U.S.C. § 285 (1994). The prevailing party must prove the existence of an "exceptional" case by clear and convincing evidence under section 285, a question of fact that we review under the clearly erroneous standard. *See Hoffmann-La Roche Inc. v. Invamed Inc.*, 213 F.3d 1359, 1365, 54 USPQ2d 1846, 1850 (Fed. Cir. 2000). We find, as did the district court, that R.F. Tech has not offered sufficient evidence to persuade us that we are dealing with an "exceptional" case that would warrant the award of reasonable attorneys' fees.

COSTS

No costs.

THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEBRASKA

SENIOR TECHNOLOGIES, INC., Plaintiff, vs. R.F. TECHNOLOGIES, INC., Defendant.	4:97CV3241 **FINDINGS OF FACT AND CONCLUSIONS OF LAW** (Filed Jul. 26, 1999)

This is a patent infringement suit in which Plaintiff claims Defendant has infringed two of its patents, the "'155 Patent" and the "'670 Patent."[1] Defendant claims the '155 Patent is invalid under 35 U.S.C. § 102, and that both the '155 and '670 Patents are unenforceable due to inequitable conduct before the U.S. Patent and Trademark Office. (Filing 250, Order on Final Pretrial Conference, at 7-8.) I now issue my findings of fact and conclusions of law pursuant to Fed.R.Civ.P. 52(a).[2]

I. FINDINGS OF FACT

1. The products at issue in this case relate to patient or resident departure monitoring systems, also known as wanderer monitoring systems. Wanderer monitoring systems are used in nursing homes, hospitals, assisted

[1] These numbers refer to U.S.Patent No. 4,682,155 ('155 Patent) and U.S.Patent No. 5,268,670 ('670 Patent).

[2] Any findings of fact more appropriately characterized as conclusions of law shall be so construed, and any conclusions of law more properly deemed findings of fact shall be so construed.

living centers, and other care facilities to monitor patients or residents who have a tendency to wander due to Alzheimer's Disease or other forms of dementia. The products are used in health care facilities, particularly in nursing homes, to provide an alarm when a resident attempts to leave the facility, thereby alerting the staff so the resident can be located and returned to the facility. (Tr. 86-90.)

2. The Plaintiff, Senior Technologies, Inc. ("STI"), is a Nebraska corporation engaged in the manufacture and sale of the "WanderGuard" wanderer monitoring system. (Filing 250, Order on Final Pretrial Conference, at 2; Tr. 288, 300-301.)

3. The Defendant, R.F. Technologies, Inc. ("RFT"), is a Wisconsin corporation engaged in the business of designing, engineering, manufacturing, and selling a variety of medical monitoring equipment, including wanderer monitoring systems which it sells under the trademark "Code Alert." (Filing 250, Order on Final Pretrial Conference, at 2; Tr. 946-47.) The RFT products at issue following this court's ruling on Defendant's motion for judgment as a matter of law[3] are the CA600, CA9000, CA9100, and the CA9120. (Tr. 921-940.)

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[3] The court explained in detail its findings and conclusions related to Defendant's motion for judgment as a matter of law on a number of Code Alert systems about which no witnesses offered testimony. (Tr. 921-940.) The court found insufficient evidence on the record to enable it to conclude that Plaintiff established a case of infringement as to the devices dismissed.

A. The Patents and Pertinent Prosecution History

4. John Shirley is the named inventor of U.S. Patent No. 4,682,155 (the "'155 Patent"). (Ex. 1.) STI acquired rights to, and ultimately ownership of, the '155 Patent through a series of licenses and assignments. (Exs. 34, 63, 217; Tr. 143-44, 146-52, 301-04, 307, 311-12.) John Brasch and Alan Cross are the named inventors of U.S. Patent No. 5,268,670 (the "'670 Patent"). (Ex. 54.) STI acquired ownership of the '670 Patent pursuant to an assignment from the inventors. (Ex. 59 at Bates No. 771618.)

5. The '155 Patent has two independent claims: Claims 1 and 6. Claim 1 discloses:

A security sensing system for monitoring the passage of persons through a door or like opening comprising:

> a transmitter module for installing on persons to be monitored, a sensing module for installing adjacent to a door opening to be monitored, and *means responsive to the opening of the door to enable the sensing module to respond to the signal transmitted by the transmitter module to produce an output response,* and alarm means energizable in response to the production of the output response to produce an alarm condition,
>
> the transmitter module including a housing having a transmitter circuit, a source of power for the transmitter circuit and transmitter antenna means installed therein,
>
> *the sensing module including a receiving circuit and associated sensing means located adjacent to the door opening to be monitored,* and
>
> said means responsive to the opening of the door including *means to enable the receiving circuit in*

the sensing module whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response for energizing the alarm means.

(Ex. 1 (emphasis added).)

6. At issue in Claim 1 of the '155 Patent (as noted above by the italicized language) is whether the RFT CA9000, CA9100, CA9120, and CA600 have (1) a "means responsive to the opening of the door to enable the sensing module to respond to the signal transmitted by the transmitter module to produce an output response"; (2) a "sensing module including a receiving circuit and associated sensing means located adjacent to the door opening to be monitored"; and (3) a "means to enable the receiving circuit in the sensing module whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response for energizing the alarm means." (Tr. 1429-1434; Ex. 509.)

7. Claim 6 of the '155 Patent discloses:

Means to monitor a doorway of a nursing home or other institution in order to produce an alarm when certain residents try to pass therethrough comprising

a transmitter device including a mounting band therefor to be worn on the wrist of the residents to be monitored, said transmitter device having a housing with a modulating circuit, a transmitter radiator and a battery source located therein,

a receiving device for mounting adjacent to the doorway including a housing and a receiving circuit therein, a signal sensor operatively connected to the receiving circuit, means for

> supplying power to the receiving circuit, *means to enable the receiving circuit,* and an output for the receiving circuit,
>
> an alarm producing device operatively connected to the output of the receiving circuit, and
>
> *said means to enable including switch means operatively connected to the receiving circuit,* said switch means being mounted in association with the doorway and having a first condition when the doorway is open and a second condition when the doorway is closed, the first condition of the switch means operating to enable the receiving circuit.

(Ex. 1 (emphasis added).)

8. At issue in Claim 6 of the '155 Patent is whether the RFT CA9000, CA9100, CA9120, and CA600 have (1) a "receiving device for mounting adjacent to the doorway including a housing and a receiving circuit therein"; (2) a "means to enable the receiving circuit"; and (3) "means to enable including switch means operatively connected to the receiving circuit." (Tr. 1435-38; Ex. 509.)

9. During the prosecution history of the '155 Patent, Claims 1 and 6 were amended. Specifically, in the amendment to Claim 1, the applicant added the term "sensing module" and expressly defined it as including the receiving circuit. Likewise, the description of the receiving device mounted adjacent to the doorway in Claim 6 was amended to include "a receiving circuit therein." (Ex. 513, Amendment Dated 1/27/87, at 2-3; Tr. 240-41.)

10. The '670 Patent, which is an improvement to the '155 Patent, has two independent claims: Claims 1 and 6. Claim 1 of the '670 Patent discloses:

A method of generating an alert signal comprising the steps of:

> generating a first signal when an unauthorized subject is in a first region within seven feet of a monitored passageway;
>
> generating a second signal upon satisfaction of a second condition that indicates the likelihood of the subject passing through the passageway;
>
> *displaying a first indication if the first signal is present* and a second indication if the second condition occurs;
>
> the step of generating a first signal including the step of transmitting a signal from the subject to a receiver.

(Ex. 54 (emphasis added).)

11. Claim 6 of the '670 Patent provides:

A security system comprising:

> first means for generating a first signal when an unauthorized subject is within seven feet of a passageway;
>
> second means for generating a second signal upon satisfaction of a second condition that indicates the likelihood of the subject passing through the passageway; and
>
> *third means for displaying a first indication if the first signal is generated* and for displaying a second indication upon the generation of the second signal;

> said first means for generating a first signal including means for transmitting a signal from the subject to a receiver.

(Ex. 54 (emphasis added).)

12. At issue is whether the signal light on the face of the control unit for the CA9120 and CA600 meets the above italicized elements of Claims 1 and 6. (Tr. 1453-1458.) STI also accused the CA9100 of having a signal light on the face of the control unit. However, as demonstrated at trial, the CA9100 does not have a signal light on the face of the control unit. (Tr. 1455.)

13. During the prosecution history of the '670 Patent, the claims were originally rejected over prior art. (Tr. 1449; Ex. 59.) To distinguish the prior art, the applicant's attorney argued that the claimed combination in Claims 1 and 6 "permits a nurse monitoring a central station to be alerted to a wanderer about to leave without being unduly alarmed by other circumstances." (Tr. 1453; Ex. 59, Amendment Dated 1/18/93, at 7.)

B. Operation of the '155 Device

14. Claims 1 and 6 of the '155 Patent disclose a personnel monitoring device which includes a transmitter, a sensing module mounted adjacent to the door, a means to enable the receiving circuit in the sensing module, and an alarm means. (Ex. 1, col. 8, ll. 60-68; col. 9, ll. 34-46.)

15. The receiving circuit disclosed in the '155 Patent which is located in the sensing module consists of the AM

radio, signal limiter, tone decoder, initial power turn-on delay, low-frequency filter, output stage, and lead 67. (Ex. 1, Fig. 3; Tr. 1271-73.) In Fig. 4[4], the receiver extends to the left of the point where resistor 136, diode 138, and the unnumbered relay contact directly above the connect. (Ex. 1, Fig. 4; Tr. 1271-73.) The principal function of the receiving circuit 14 is to accept an input signal received from the wanderer's transmitter, process its signal in the successive stages of the receiver, and deliver that signal through the transistor 112 to an output stage to produce a response to energize the alarm. (Tr. 1278.) The function of the two-stage audio filter in Fig. 4 is to extract from noise a single frequency tone between 770 to 990 Hz. (Tr. 2008.) One stage removes components at frequencies less than 770 Hz, while the other stage removes components at frequencies above 990 Hz. (Tr. 2008-09.) The two-stage audio filter simply looks for a single sinusoid 900 Hz wave. (Tr. 2014.)

16. When the door is closed, the input circuit to the transistor 112 is short-circuited and that short circuit has two effects: it disconnects the base of the transistor to the emitter of transistor 112 and it short-circuits the output of the two-stage audio filter 106 through resistor 108, thereby electronically disrupting and disabling the receiving circuit by disconnecting part of the receiving circuit from the remainder of the receiving circuit. (Tr. 1276-77; Ex. 1, col. 8, ll. 19-23; Ex. 639.) The door switch electrically disconnects the left-hand part of the receiving circuit from the right-hand part of the receiving circuit. (Tr. 2006.) While the left hand is still operating, the right hand is

[4] Figure 4 of the '155 Patent is attached to these Findings of Fact and Conclusions of Law.

inoperable, or disabled. (Tr. 1278.) The transistor 112 can receive no signal when the door is closed. (Tr. 1278-1279.)

C. Operation of the '670 Device

17. Claims 1 and 6 of the '670 Patent disclose a pre-alert device which displays a light and alarms when a wanderer is within seven feet of a monitored door when the door is closed to give caregivers at a monitoring station warning of a possible departure. (Ex. 54; Tr. 557-58, 1453.)

D. Operation of RFT's Code Alert Products

18. In 1992 RFT first manufactured and sold its CA9000 wanderer monitoring device. The CA9000 consists of a transmitter and receive antennae which are mounted adjacent to a door, a control unit which includes a receiving circuit and a microprocessor that analyzes the signals, and a door switch. (Tr. 1135-44.) The transmitter operates at a frequency of 65.5 Khz and sends an eight-bit coded signal which is detected by a receive antenna mounted near the door. (Tr. 1137-38.) The signal is sent to the receiver in the control unit where it is demodulated and then sent to the microprocessor. (Tr. 1142.) The receive antenna and receiver continuously receive signals and the microprocessor continuously analyzes received signals to determine if a valid signal from a transmitter is received and if a monitored door is open. (Tr. 1143-44.) If the microprocessor determines that it has received an eight-bit coded signal at 65.5 Khz, it then checks to see if the door is open. (Tr. 1143-44.) If the door is open, the microprocessor activates an alarm. (Tr. 1144.)

19. In 1994 RFT introduced the CA9100. Beginning with this model, RFT removed the receiver from the control unit and placed it in the antenna mounted near the door. (Tr. 1151.) Inside both the receiver and the control unit are lights which illuminate upon the detection of "noise," meaning other RF signals that can interfere with the operation of the system. (Tr. 1152.)

20. In 1995 RFT introduced the CA9120, a model which included a modified control unit with an amber signal light on its face. (Tr. 1013.) The amber signal light serves a diagnostic purpose and takes the place of an oscilloscope.[5] The amber signal light flickers if noise is present or a transmitter is within range, advising of the necessity to adjust the system. However, the flickering signal light is not discernable from any appreciable distance, and noise or a transmitter within range would not create a display at a nurse's station. (Tr. 1034-35; 1455.) Before 1996, the signal light was inside the control unit, requiring maintenance persons to remove the cover periodically to check the light for noise. (Tr. 1152-56.)

21. The CA600, which also has the exposed signal light, was introduced in 1998 to be a value alternative to the CA9120. (Tr. 1013, 1037.)

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[5] An oscilloscope is an instrument that allows one to view the time and amplitude of electronic signals. (Tr. 1156.)

E. Contrast Between Patented Devices and Code Alert Products

22. The door switch (the means responsive to the opening of the door) in RFT's Code Alert products is connected to the microprocessor, not the receiving circuit. (Tr. 1283-84.) The control unit, which contains the microprocessor, is a separate module not found in the system described in the '155 Patent and should be located at a distance of 10 feet from the door opening. (Ex. 635B, at 14 & Ex. 635L, at 10.)

23. The door switch is not used in any of the Code Alert devices to enable the sensing module or the receiving circuit to respond to the signal transmitted by the transmitter module to provide an output response or to produce a response for energizing the alarm means. (Tr. 1432, 1434-35.)

24. In contrast to Fig. 4 of the '155 Patent, the door switch in the Code Alert systems is used in conjunction with a resistor and a voltage source to generate a voltage signal. (Tr. 2003.) The signal generated by the door switch in conjunction with the resistor and the voltage source enters the microprocessor on a different terminal than the signal that is generated by the transmitter on the wanderer's wrist. (Tr. 2004.) In contrast, in Fig. 4 of the '155 Patent, the door switch physically connects to the same terminal as the signal coming from the wanderer's transmitter. (Tr. 2004.)

25. The sensing module in the Code Alert products provides an output response to the signal transmitted by the transmitter unit, regardless of whether the door is opened or closed. The Code Alert products use a microprocessor, not a receiving circuit, to respond to the transmitted signals and to send an alarm. (Tr. 1303, 1143-44.)

26. The microprocessor in the Code Alert products performs AND functions and uses AND gates to perform its functions, including the function of sounding an alarm. (Tr. 2006-07, 2020.) The function of the AND gate in the Code Alert microprocessor is to switch paths within it so that a received input signal is switched through to an output terminal or it is switched somewhere else inside the AND gate. (Tr. 2022.) The transistors in the microprocessor which are connected together to form an AND gate are switches. (Tr. 2005.) By definition, an AND gate is a switch device which steers a signal one way or another, but it does not disconnect the signal. (Tr. 2006-07.) There is no electrical interruption between the AND gate and the transistor. (Tr. 2022.)

27. The AND gate in the Code Alert microprocessor has two independent input signals or voltages, in contrast to transistor 112 in Fig. 4 of the '155 Patent, which has only one input terminal. (Tr. 2006.) A voltage signal is applied at each of the two independent input terminals in the AND gate in the microprocessor. One signal is used to switch a transistor or equivalent within the AND gate so that it transmits or it does not transmit the second input, which would be the signal received from the wanderer's transmitter. (Tr. 2006.)

28. There is no electrical interruption in the Code Alert microprocessor, as there is in the device disclosed in the '155 Patent. In the microprocessor, there is a switching action that occurs that determines whether a received signal will be sent to a transistor or not, but the switching action is controlled by two independent voltage signals entering the AND gate. (Tr. 2021.) In contrast, in Fig. 4 of the '155 Patent, there is only one electrical signal present at any time on the input to transistor 112, and that electrical input

signal is effectively removed from the circuit when the door switch is closed because the door switch short-circuits the current coming from audio filter 106 through the resistor to the right of it. (Tr. 2021.)

29. The audio filter 106, door switch 168, and transistor 112 in the '155 Patent do not perform an AND function and the transistor 112 is not an AND gate. (Tr. 1270-71.) An AND gate requires two binary inputs to which two binary signals are applied. (Tr. 1266-69.) Transistor 112 is an analog device that has only one input terminal, not two. (Tr. 1270.) Further, the audio filter's output is the input to the transistor 112. Since the audio filter is an analog device, it produces an analog output, not a binary output. (Tr. 1271.) Further, the door switch emits no signal. (Tr. 1284-85, 2021.) Therefore, transistor 112 is not an AND gate because it does not have two binary inputs to which two binary signals are applied. (Tr. 1270-71.) For the controller module in the Code Alert products to be disabled and enabled by the door switch as the receiving circuit in the '155 Patent is, the door switch must be disconnected and reconnected at the microprocessor's input terminal, which receives the signal generated by the transmitter on the wanderer's wrist, so that when the door switch is closed, the signal is short-circuited to ground, thus altering the electric circuit in the Code Alert systems in the same way the receiving circuit shown in Fig. 4 of the '155 Patent is structurally changed by the activation of the door switch. (Tr. 2002-2003.) The effect of this alteration would be to prevent the transmitted signal received from the wanderer from entering the microprocessor, just as the door switch in Fig. 4 prevents the signal from entering transistor 112. (Tr. 2003.)

30. The microprocessor in the Code Alert systems does not substantially perform the functions of the audio filter in Fig. 4 of the '155 Patent. The input signal to the audio filter is an analog signal. The input to the microprocessor is a digital or binary signal. For the Code Alert microprocessor to perform the functions of the audio filter in Fig. 4, two additional components must be added to the microprocessor: first, an analog-to-digital converter to allow conversion of the analog signal at the input of the audio filter to digital form in order to allow the microprocessor to function; and second, a multi-bit input port. (Tr. 2007 & 2009.) Neither device is disclosed in the '155 Patent.

31. The microprocessor in the Code Alert products is not the substantial equivalent of the audio filter 106 and transistor 112 in the '155 Patent for the reasons stated in the above paragraph, and because the hardware and software in the Code Alert products operate differently than the hardware and software that would be required to operate the Code Alert products reconfigured to perform the same functions as the audio filter and transistor in the '155 Patent. (Tr. 2013-17.) Specifically, the hardware of a digital filter would periodically sample the analog input signal. (Tr. 2011-13.) In contrast, the microprocessor in the actual Code Alert products is conducting other business internally, noting the time each burst of carrier is received from the transmitter. (Tr. 2013.) Once the microprocessor receives eight bursts, it examines the times at which those bursts arrived and reaches a decision as to whether those times are correct to qualify as a valid signal. (Tr. 2013.) In terms of software, a digital audio filter takes input samples at intervals of 500 millionths of a second. (Tr. 2016.)

In contrast, the Code Alert system takes a sample as each new burst arrives.

F. 35 U.S.C. § 102(b) & Inequitable Conduct

32. John Shirley applied for the '155 Patent on January 13, 1986, making the "critical date" for purposes of invalidity analysis January 13, 1985. (Ex. 1.) In early June 1984, inventor John Shirley, Louis Schrieber, and Sid Martin, all of whom had entered an agreement to manufacture and market a wanderer monitoring system, installed such a system at the Evergreen nursing facility in Creve Coeur, Missouri, for field testing. (Tr. 173-76, 266.) The success of the system was reported in a July 5, 1984, article appearing in the *St. Louis Post-Dispatch,* which stated: "A wristwatch-size radio transmitter is fixed to the patient's arm or leg. When the patient approaches a door, the transmitter's signal is picked up by a special receiver attached to the door. When the door is opened, an alarm is sounding in a nursing station. . . . " (Ex. 522.)

33. In early to mid-fall of 1984, the wanderer monitoring system was also installed at the Clayton on the Green nursing home in Missouri. The administrator of that facility, Catherine Bono, understood that the facility would not pay for the system, and that adjusting and "testing" of the system were being performed by the product's inventor and his partners, who had permission to enter and leave the facility as they wished in order to perform system adjustments. (Filing 319B, Dep. Catherine Bono, at 8-12, 37; Tr. 266.)

34. Inventor John Shirley did not add a door switch to his invention until March or April of 1985. (Tr. 107-111, 228.) Ms. Bono, administrator of the Clayton on the Green

facility, testified that she believed the early units installed at her facility required a door to open for an alarm to sound. (Filing 319B, Dep. Catherine Bono, at 13-15.) However, Ms. Bono also testified that at times the units alarmed *before* the door opened. (*Id.* at 41.) Mr. Shirley's testimony and a demonstrative video shown during trial depicted how an early unit lacking a door switch could appear to sound an alarm when the door was opened. (Ex. 35; Tr. 128.) The receiver of the unit had a gain control which could be adjusted so that a person wearing a transmitter did not actually cause an alarm until that person was at or through the door, but creating the appearance that the opening of the door triggered an alarm. (Tr. 128-130.) This evidence weighs heavily against finding that operations like those described in the newspaper article or described by Ms. Bono indicate use of a door switch prior to the critical date. This conclusion is confirmed by Dr. Murphy, the defendant's expert witness, who testified that the circuit of Fig. 4 of the '155 Patent appeared to have been originally designed to operate without a door switch (Tr. 1286), as stated by Mr. Shirley. (Tr. 90, 99-101, 107-112.)

35. Inventor John Shirley did not disclose to the '155 Patent examiner the installation of the early wanderer monitoring systems at the Evergreen and Clayton on the Green nursing homes, or the existence of the July 5, 1984, newspaper article appearing in the *St. Louis Post-Dispatch*. (Tr. 228-29.) Mr. Shirley's omissions were material because they would have disclosed the existence of a device that was closer to the invention claimed in the '155 Patent than any of the prior art, and a reasonable patent examiner therefore would have wanted to review such information in considering whether to allow the issuance

of the patent. (Tr. 1499; Exs. 15, 18, and 19.) However, because it is unclear that Mr. Shirley knew about the existence of the newspaper article during the pendency of the patent application, or, even if he did, that he appreciated its potential significance, Mr. Shirley had no intent to deceive the U.S. Patent and Trademark Office. (Tr. 228-29.)

II. CONCLUSIONS OF LAW

Plaintiff asserts that the defendant's Code Alert products which remain at issue in this lawsuit infringe Claims 1, 2, 6, and 8 of the '155 Patent and Claims 1 and 6 of the '670 Patent.

A. Literal Patent Infringement

1. One who makes, uses, or sells another's patented invention within the United States is liable for infringement. 35 U.S.C. §§ 154, 271(a).

2. STI has the burden of showing infringement by a preponderance of the evidence. *Smithkline Diagnostics, Inc. v. Helena Labs. Corp.,* 859 F.2d 878, 889 (Fed. Cir. 1988); *Envirotech Corp. v. Al George, Inc.,* 730 F.2d 753, 758 (Fed. Cir. 1984).

3. Literal infringement requires a two-step analysis: "(1) a proper construction of the claim to determine its scope and meaning, and (2) a comparison of the properly construed claim to the accused device or process." *Conroy v. Reebok Int'l Ltd.,* 14 F.3d 1570, 1572 (Fed. Cir. 1994); *Dolly, Inc. v. Spalding & Evenflo Companies, Inc.,* 16 F.3d 394, 397 (Fed. Cir. 1994). The first step is a question of law; the second is a question of fact. *Standard Oil Co. v.*

American Cyanamid Co., 774 F.2d 448, 452 (Fed. Cir. 1985). The first step requires the court to look at the claim language, the patent's specification, and the prosecution history. *Arachnid, Inc. v. Medalist Mktg. Corp.*, 972 F.2d 1300, 1302 (Fed. Cir. 1992).

4. A product literally infringes a patent if each of the limitations in the asserted patent claim is contained in the accused product. *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1574 (Fed. Cir. 1993), *cert. denied*, 511 U.S. 1069 (1994). For infringement to exist, every limitation in a patent claim must be met exactly or by a substantial equivalent. *Becton Dickinson & Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 796 (Fed. Cir. 1990); *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988).

5. "One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim." *Wahpeton Canvas Co., Inc. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989).

6. 35 U.S.C. § 112(6) applies in analyzing literal infringement where there is means-plus-function claim language. This section provides: "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." "In order to meet a means-plus-function limitation, an accused device must (1) perform the identical function recited in the means limitation and (2) perform that function using the structure disclosed in

the specification or an equivalent structure." *Kearns v. Chrysler Corp.*, 32 F.3d 1541, 1548 n.8 (Fed. Cir. 1994), *cert. denied*, 514 U.S. 1032 (1995).

7. "In the context of section 112 . . . an equivalent results from an insubstantial change which adds nothing of significance to the structure, material, or acts disclosed in the patent specification. A determination of section 112 equivalence does not involve the equitable tripartite test of the doctrine of equivalents. As this court has stated, the sole question under section 112 involves comparison of the structure in the accused device which performs the claimed function to the structure in the specification." *Valmont Industries, Inc. v. Reinke Mfg. Co., Inc.*, 983 F.2d 1039, 1043 (Fed. Cir. 1993) (internal punctuation and citations omitted).

8. "Generally, a number of factors may be considered when determining the scope of a means-plus-function limitation, including the language of the claim, the patent specification, the prosecution history of the patent, other claims in the patent, and expert testimony." *In re Hayes Microcomputer Products, Inc. Patent Litigation*, 982 F.2d 1527, 1543 (Fed. Cir. 1992) (internal punctuation and citation omitted).

1. Claim Construction

9. Claims are construed based on the actual claim language, the specification, the file history, and, if necessary, extrinsic evidence. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979-80 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The standard applied is what one reasonably skilled in the art at the time of the invention would have understood the term to mean. *Id.* at 986. The

claims establish the limits or boundaries of the patent while the specification, of which the claims are a part, contains a written description of the invention that would enable one of ordinary skill in the art to make or use the invention. Claims must be read in view of the specification of which they are a part. *Id.* at 979. "For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims." *Id.* Looking to a patent's specification to aid a court's interpretation of a term in a claim is an appropriate practice. *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.,* 93 F.3d 1572, 1578 (Fed. Cir. 1996).

10. Likewise, the Court has broad power to look as a matter of law to the prosecution history of the patent in order to ascertain the true meaning of language used in patent claims. *Markman,* 52 F.3d at 979. The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution. *Southwall Technologies, Inc. v. Cardinal IG Co.,* 54 F.3d 1570, 1576 (Fed. Cir.), *cert. denied,* 516 U.S. 987 (1995).

11. Claims 1 and 6 of the '155 Patent present two claim construction issues: (1) whether the claims disclose a sensing module which must be mounted adjacent to the door and which must include both the antenna *and* the receiving circuit that receives signals and responds to those signals to produce an alarm, and (2) whether "means to enable the receiving circuit" discloses a receiving circuit capable of receiving signals from the transmitter when the door is open, but incapable of receiving signals when the door is closed.

12. With regard to the first issue, in the amendment to Claim 1, the applicant added the term "sensing module" and expressly defined it as *including* the receiving circuit. Likewise, the description of the receiving device mounted adjacent to the doorway in Claim 6 was amended to include "a receiving circuit therein." In the prior art section of the '155 Patent, the "receiver unit" and "receiver module" are identified as being "located on or adjacent to the door or doorway." (Ex. 1, col. 1, ll. 56-57; col. 2, ll. 6-7.) The specification includes similar references. (Ex. 1, col. 6, ll. 43-47.) "Receiver" and "sensing module" are used interchangeably in the specification. (Ex. 1, col. 3, l. 54; col. 4, l. 27, l. 43; col. 5, ll. 60-61; col. 6, ll. 58-59.) Based on the amendments and definitions given in the '155 Patent, the sensing module disclosed in the claims requires that the receiving circuit which responds to the signals and produces a response be inside of the sensing module, and the sensing module be mounted adjacent to the door.

13. The specification, likewise, defines the term "enable." At col. 8, ll. 13-16, the '155 Patent states: "When the door is closed the receiver circuit is *incapable* of receiving signals from the transmitters but when the door is open it *can* receive such signals." (Emphasis added, numerical references omitted.) At col. 8, ll. 19-22, the patent describes how the receiving circuit is disabled: "When the door is closed, the switch 168 (see also FIG. 4) is not actuated (closed) and will short between the base and the emitter of the transistor 112. This prevents the transistor 112 from energizing the relay 124." Also at col. 4 the specification states:

> It should be noted that with the present system a resident equipped with a transmitter module can

> move as close as he or she wants to an unauthorized door so long as the door is not opened without the receiver module being enabled to receive the transmitted signal. In other words *there must be some movement of a door member to operate switch means in the circuit of the receiver before the receiver will be able to receive a signal and produce a response for sending to the nurse's station.* If some door movement were not required then every time a resident equipped with a transmitter module 10 came close to a door a signal would be received and a response sent and this would be undesirable.

(Emphasis added). In addition, at col. 1, ll. 55-58, the prior art is distinguished over the invention and the transmitter modules are described as "continuously transmit[ing] omnidirectional signals that are received by a receiver unit located on or adjacent to the door or doorway, but only when the door is opened by a person so equipped."

14. Based on the language in the specification of the '155 Patent, the court concludes that Claims 1 and 6 of the '155 Patent disclose a receiving circuit that can receive signals when the door is open, but cannot when the door is closed. The receiving circuit is enabled by the door switch when the door is open and disabled by the door switch when the door is closed.

15. The issue raised by Claims 1 and 6 of the '670 Patent is the location of the first display which serves as the pre-alert. The prosecution history, however, resolves the issue. Claims 1 and 6 of the original application for the '670 Patent were rejected as obvious over prior art. In order to distinguish the prior art, the applicant's attorney argued that the claimed combination "permits a nurse monitoring a central station to be alerted to a wanderer

about to leave without being unduly alarmed by other circumstances." (Ex. 516, at 7.) The claims were then allowed. By virtue of this argument, the patentee relinquished any right to a device that may display a first indication at a location other than a central monitoring station. This conclusion is consistent with the specification which states, "an alert signal is given by the first signal means on the monitoring station. Thus, persons at the central station will pay close attention waiting for an alarm signal." (Ex. 54, col. 5, ll. 56-59 (numerical references omitted).)

16. Based on the prosecution history of the '670 Patent, Claims 1 and 6 of the '670 Patent disclose a pre-alert display which displays a light at a remote location when a monitored person wearing a transmitter is within seven feet of the monitored door when the door is closed in order to give a caregiver advance notice that a monitored person may open the door and leave.

2. Literal Infringement Analysis

a. The '155 Patent

17. As stated above, Claims 1 and 6 are written in "means-plus-function" format. Such claims are "construed to cover the corresponding structure, . . . described in the specification and equivalents thereof." 35 U.S.C. § 112(6). To find literal infringement, the fact finder must determine whether the accused device performs an identical function to the one recited in the means-plus-function clause. If the identical function is performed, the fact finder then determines whether the accused device utilizes the same structure or materials described in the specification or

their equivalents. *Mas-Hamilton Group v. LaGard, Inc.*, 156 F.3d 1206, 1211-12 (Fed. Cir. 1998).

18. The door switch (the means responsive to the opening of the door) is not used in any of the four Code Alert devices at issue to enable the sensing module or the receiving circuit to respond to the signal transmitted by the transmitter module to provide an output response or to produce a response for energizing the alarm means. (Tr. 1312-14, 1434-35.) Rather, the sensing module in the accused products provides an output response to the signal transmitted by the transmitter unit, whether the door is open or closed. (Tr. 1303.) In addition, the door switch is utilized in cooperation with a separate control module, not found in the system described in the '155 Patent, which may be located at an arbitrary distance from the door opening. (Tr. 1430-32.) Therefore, the accused products do not have a sensing module with the components described in the claim located adjacent to the door, and the sensing module in the Code Alert products which is adjacent to the door does not perform the claimed functions. Further, in the CA9000, only an antenna, not the receiver, is adjacent to the door. (Tr. 1303, 1313.) Since the door switch does not perform the identical function recited in the means-plus-function clauses, the Code Alert systems cannot infringe. Further, the Code Alert control unit is not the same or equivalent to the receiver disclosed in the patent. Because not all elements of Claim 1 of the '155 Patent are present in the accused device, the CA9000, 9100, 9120, and 600 products do not literally infringe Claim 1.

19. Likewise, the CA9000, 9100, 9120, and 600 do not literally infringe Claim 6 because (1) the receiving circuit which responds to signals to produce a response is not contained in the housing of the sensing module, and

(2) the door switch is connected to the control module, not the receiving circuit, and the door switch functions to provide a signal to a computing unit, not to enable the receiving circuit. (Tr. 1316-17, 1436-37.) Again, the door switch does not perform the identical function, and the control unit is not the same or equivalent to the receiver disclosed in the '155 Patent. Therefore, these devices do not literally infringe since not all elements are present in the accused devices.

20. Simply put, I conclude that there is no literal infringement of the '155 Patent because the patent refers to "enabling" the circuit to receive a signal, such that no portion of the transmitter signal is received by the transistor that activates the alarm when the door is closed due to an electrical block between the transistor and the audio filter. This is in contrast to the Code Alert products' microprocessor, in which the transistor that fires the relay that activates the alarm receives a *portion* of the digital signal when the door is closed. Thus, the patented and accused products are literally different. This conclusion is consistent with *General Elec. Co. v. Nintendo Co., Ltd.,* 1999 WL 357623 **3-4 (Fed. Cir. June 2, 1999), in which the court, interpreting a means-plus-function claim, found that disruption of a signal path in the patented invention was not the same as bypassing the signal path, as in the accused system. In the '155 Patent, the signal path is electronically disrupted by the door switch. In the accused products, the microprocessor switches signals from one path to another. As in *General Electric,* identical functions are not performed.

21. The court further finds no literal infringement of dependent Claims 2 and 8 of the '155 Patent.

b. The '670 Patent

22. The CA9120 and CA600 do not literally infringe Claims 1 or 6 the '670 Patent because the signal light displayed on the face of the control unit does not constitute a first indication displayed at a nurse's station when an unauthorized subject is in a first region within seven feet of a monitored passageway. (Tr. 1333, 1454-56, 1458-59.) The CA9120 and 600 devices produce an indication at the nurse's station *only* when the door is open. Therefore, not all elements are literally present in the accused devices. Because neither the CA9000 nor the CA9100 have a status light on the outside of their control units, these products do not literally infringe the '670 Patent.

B. Patent Infringement Under the Doctrine of Equivalents

23. A device may infringe under the doctrine of equivalents if it is demonstrated that each and every element or limitation of a claim is present in the accused device by a substantial equivalent which performs substantially the same function in substantially the same way to reach substantially the same result. *Augustine Medical, Inc. v. Gaymar Indus., Inc.,* 1999 WL 371740, at *12 (Fed. Cir. June 8, 1999).

24. The doctrine of equivalents is not a license to erase or ignore the structural or functional limitations of a patent claim on which the public is entitled to rely in avoiding infringement. *Athletic Alternatives, Inc. v. Prince Mfg., Inc.,* 73 F.3d 1573, 1581-82 (Fed. Cir. 1996). The doctrine of equivalents should not be employed to rewrite claims. *See London v. Carson Pirie Scott & Co.,* 946 F.2d 1534, 1538 (Fed. Cir. 1991).

1. The '155 Patent

25. The accused products use a microprocessor, not a receiving circuit, to respond to signals and send an alarm. The sensing module in the accused devices outputs the signal received from the transmitter at all times, whether the door is open or closed. This output signal is processed in the microprocessor, which checks to see whether the door is open or not after verifying that a valid eight-bit coded signal at 65.5 Khz has been received. If so, the microprocessor activates the alarm, thus the microprocessor is used to perform elaborate signal processing not disclosed in the patent, and not as a receiving circuit. The microprocessor processes signals whether the door is open or not.

26. To establish that RFT's microprocessor is a substantial equivalent of the '155 receiving circuit, STI makes two arguments. First, STI argues the audio filter 106, door switch 168, and transistor 112 of the '155 Patent perform an AND function and that transistor 112 is an AND gate, just as the microprocessor in the Code Alert systems performs AND functions and uses AND gates to perform its functions, including the function of sounding an alarm. (Tr. 502-03.) STI's argument fails for several reasons. First, an AND gate requires two binary inputs to which two binary signals are applied. Transistor 112 has only one input terminal, not two. (Tr. 1270.) Second, the audio filter's output is the input to transistor 112. Yet, the audio filter is an analog device which produces an analog, not binary, output. (Tr. 1271.) Further, the door switch in the '155 Patent emits no signal. Transistor 112 is not an AND gate, because it does not have two binary inputs to which two binary signals are applied. (Tr. 1270.) Therefore, the Code Alert microprocessor and '155 receiving

circuit do not function in substantially the same way by substantially the same means.

27. Second, STI argues that the Code Alert microprocessor is the substantial equivalent of the audio filter 106 and transistor 112 of Fig. 4 to the '155 Patent. (Tr. 1985-88.) However, STI's argument fails because the Code Alert microprocessor could perform the function of the audio filter only if an analog-to-digital converter were added to convert the analog signal to digital form, and a multi-bit input port were added to the microprocessor. (Tr. 2007-10.) Neither device is disclosed in the '155 Patent. Further, Dr. Murphy's testimony at trial contrasted the different functioning of the hardware and software of the actual Code Alert products versus the functioning of the Code Alert products if they were converted to perform the functions of the audio filter and transistor. (Tr. 2009-2017.)

28. In essence, the way in which the Code Alert system operates is much different than the operation of the plaintiff's system. In particular, the digital code that Plaintiff says is equivalent to the analog tone is materially different because it is less likely to trigger a false alarm. An analog signal, like the transmitter signal in the plaintiff's device, can exist as interference coming from another source, causing the false alarm. That same condition is substantially less likely to occur with a digital signal. Thus, the Code Alert system does not perform in substantially the same way because the inherent differences between analog signals and digital signals provide an inherently different product that results not from mere improvements to the plaintiff's systems, but from inherent changes in the type of signal that generates the alarm. Here, the focus is on the type of signal that generates the alarm and the type of receiver necessary to process the

signal, and both the signal and the equipment that process the signal are inherently different and perform in substantially different ways. Therefore, the CA9000, 9100, 9120, and 600 do not infringe Claims 1 or 6 of the '155 Patent under the doctrine of equivalents because they do not function in substantially the same way by using substantially the same means.

29. Again, as in *General Elec. Co. v. Nintendo Co., Ltd.*, the receiving circuit and microprocessor do not perform equivalent functions. *Id.*, 1999 WL 357623, at *5.

2. The '670 Patent

30. The CA9120 and CA600 do not infringe Claims 1 or 6 of the '670 Patent under the doctrine of equivalents because the signal light in the Code Alert products does not perform substantially the same function of displaying an alert at a central location that warns when a monitored person is within seven feet of a monitored passageway. (Tr. 1487-89.) Specifically, if a wanderer is near the door, the flickering yellow light at the box near the door in the Code Alert products does not serve substantially the same function as the constant red alert on the nurses' panel in Plaintiff's product.

31. Since neither the CA9000 nor CA9100 have a signal light on the face of the control unit, neither device infringes the '670 Patent under the doctrine of equivalents.

C. Patent Validity

1. 35 U.S.C. § 102(b)

32. A patent is presumed valid and the party asserting invalidity must overcome the presumption by clear and convincing evidence establishing facts which support the conclusion of invalidity. 35 U.S.C. § 282; *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n,* 988 F.2d 1165, 1177 (Fed. Cir. 1993).

33. Under 35 U.S.C. § 102(b), an inventor loses the right to obtain a patent if the invention is the subject of a printed publication, is placed in public use, or is on sale in the United States more than one year prior to the date of the application for the patent.

34. To be considered a § 102(b) reference, the item must sufficiently describe the claimed invention to have placed the public in possession of it. *Paperless Accounting, Inc. v. Bay Area Rapid Transit System,* 804 F.2d 659, 665 (Fed. Cir. 1986); *Carella v. Starlight Archery & Pro Line Co.,* 804 F.2d 135, 139 (Fed. Cir. 1986). The disclosure must be such as will give possession of the invention to the person of ordinary skill. *Paperless Accounting, Inc.,* 804 F.2d at 665. *See Struthers Scientific & Int'l Corp. v. Rappl & Hoenig Co., Inc.*, 453 F.2d 250, 255 (2d Cir. 1972) (description in printed publication for purposes of 35 U.S.C. § 102(b) must "impart to the person of ordinary skill sufficient information which, coupled with the disclosures of the prior art, would enable him to devise the invention without further genuine inspiration or undue experimentation.").

35. Public use includes "'any use of [the claimed] invention by one who is under no limitation, restriction or

obligation of secrecy to the inventor.'" *Baxter Int'l, Inc. v. COBE Laboratories, Inc.*, 88 F.3d 1054, 1058 (Fed. Cir. 1996) (quoting *In re Smith,* 714 F.2d 1127, 1134 (Fed. Cir. 1983)), but "the existence of a confidentiality agreement is not dispositive of the public use issue." *Tone Brothers, Inc. v. Sysco Corp.*, 28 F.3d 1192, 1200 n.8 (Fed. Cir. 1994), *cert. denied,* 514 U.S. 1015 (1995). "'The use of an invention by the inventor himself, or of any other person under his direction, by way of experiment, and in order to bring the invention to perfection, has never been regarded as [a public] use.'" *Baxter Int'l, Inc.*, 88 F.3d at 1059 (quoting *City of Elizabeth v. American Nicholson Pavement Co.*, 97 U.S. 126, 134 (1877)).

36. "[T]he on-sale bar applies when two conditions are satisfied before the critical date. First, the product must be the subject of a commercial offer for sale. . . . Second, the invention must be ready for patenting." *Pfaff v. Wells Electronics, Inc.*, 119 S.Ct. 304, 311-12 (1998). In *Pfaff,* the first part of the test was satisfied by a purchase order. *Id.* at 312. Similarly, the Federal Circuit, applying the *Pfaff* test, found the on-sale bar test satisfied by record evidence of a signed purchase agreement before the critical date. *Weatherchem Corp. v. J.L. Clark, Inc.*, 163 F.3d 1326, 1333 (Fed. Cir. 1998). Other definitions of what qualifies as clear and convincing evidence of a sale offer include: "a specific and definite offer for sale of a successfully tested device, such as that evidenced by a completed contract for sale, that embodies every limitation of the later patented invention as claimed prior to the critical date and that sale is clearly for commercial purposes," *Evans Cooling Systems, Inc. v. General Motors Corp.*, 125 F.3d 1448, 1451 (Fed. Cir. 1997), *cert. denied,* 118 S.Ct. 1050 (1998); "the sale or offer was primarily for profit

rather than for experimental purposes," *Kolmes v. World Fibers Corp.*, 107 F.3d 1534, 1540 (Fed. Cir. 1997) (internal punctuation and citation omitted); and "a sale made on ordinary commercial terms," *Mahurkar v. Impra Inc.*, 71 F.3d 1573, 1577 (Fed. Cir. 1995). Inferences of a sale or offer to sell, even if likely, are insufficient to meet the clear and convincing burden of proof. *Intel Corp. v. U.S. Int'l Trade Comm'n*, 946 F.2d 821, 830 (Fed. Cir. 1991).

37. An instructive explanation of what fails to constitute a sale offer was given by the Federal Circuit in overturning an invalidity finding of a district court in *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (internal citations omitted):

> The district court reasoned that this project "called for the eventual marketing of the Marcus bottles once all technical difficulties were resolved," and on this basis held that the Marcus bottles were on sale. This holding was in error, for the "on sale" bar of § 102(b) does not arise simply because the intended customer was participating in development and testing.

38. As in the situation before this Court, making preparations for the sale of a claimed invention does not invoke the on-sale bar without a showing by clear and convincing evidence that an actual sale or definite offer to sell before the critical date occurred. *Intel Corp.*, 946 F.2d at 830.

39. With regard to the 1984 *St. Louis Post-Dispatch* article describing the early high frequency prototype system that was installed in the Evergreen nursing home in Missouri as being a publication sufficient to invalidate the '155 Patent under 35 U.S.C. § 102(b), the Court finds

that the *Post-Dispatch* article does not sufficiently describe the system such that a person of ordinary skill could devise the invention without undue experimentation.

40. Installation of the wandering monitoring system at the Missouri nursing homes prior to the critical date for "testing" does not constitute a public use under 35 U.S.C. § 102(b) sufficient to invalidate the '155 Patent. (Tr. 107-11, Test. of John Shirley; Filing 319B, Dep. Catherine Bono, at 37.) *Baxter Int'l. Inc.,* 88 F.3d at 1058-60.

41. The court also finds there is not clear and convincing evidence of an offer or sale of the patented system before the critical date of January 13, 1985. No system in existence prior to the critical date had a door switch or other "means responsive to the opening of the door," which is a necessary element of the claims of the '155 Patent. Further, there was no evidence of a purchase order, amount paid, contract for sale, or sale or offer made primarily for profit. The Court finds that RFT has failed to meet its burden of demonstrating a pre-critical date sale or offer of the patented invention by clear and convincing evidence, and therefore RFT has failed to invalidate the '155 Patent pursuant to 35 U.S.C. § 102(b).

2. Inequitable Conduct

42. The defense of inequitable conduct before the United States Patent and Trademark Office ("PTO"), if proven, renders all the claims of the patent in suit unenforceable for the life of the patent. *J.P. Stevens & Co., Inc. v. Lex Tex Ltd., Inc.,* 747 F.2d 1553, 1560 (Fed. Cir. 1984), *cert. denied,* 474 U.S. 822 (1985). Establishing the defense of inequitable conduct requires proof by clear and convincing evidence that inequitable conduct by the applicant or

those connected with the application occurred during the application process of the patent in question. Both the elements of intent and materiality must be proven by clear and convincing evidence. *Braun, Inc. v. Dynamics Corp. of America,* 975 F.2d 815, 822 (Fed. Cir. 1992); *J.P. Stevens & Co., Inc.,* 747 F.2d at 1559.

43. Inequitable conduct "includes failure to disclose material information, or submission of false material information." *J.P. Stevens & Co., Inc.,* 747 F.2d at 1559.

44. To be guilty of inequitable conduct, one must have intended to act inequitably. *Braun, Inc.,* 975 F.2d at 822; *FMC v. Manitowoc Co., Inc.,* 835 F.2d 1411, 1415-17 (Fed. Cir. 1987). "A holding of inequitable conduct requires . . . proof of intent to deceive or mislead, and does not flow simply from failure to meet the requirements of patentability. Culpable conduct is required, such as intentional concealment of the best mode under the mask of a fictitious mode." *Engel Indus., Inc. v. Lockformer Co.,* 946 F.2d 1528 (Fed. Cir. 1991) (citations omitted).

45. "[O]ne who alleges a 'failure to disclose' form of inequitable conduct must offer clear and convincing proof of: (1) prior art or information that is material; (2) knowledge chargeable to applicant of that prior art or information and of its materiality; and (3) failure of the applicant to disclose the art or information resulting from an intent to mislead the PTO. That proof may be rebutted by a showing that: (a) the prior art or information was not material (e.g., because it is less pertinent than or merely cumulative with prior art or information cited to or by the PTO); (b) if the prior art or information was material, a showing that applicant did not know of that art or information; (c) if applicant did know of that art or information,

a showing that applicant did not know of its materiality; (d) a showing that applicant's failure to disclose art or information did not result from an intent to mislead the PTO." *FMC Corp.*, 835 F.2d at 1415.

46. Even if the *Post-Dispatch* article was material, RFT has not shown by clear and convincing evidence that Mr. Shirley, the inventor of the '155 Patent, had any culpable intent in failing to bring the *Post-Dispatch* newspaper article to the attention of the examiner handling the patent application, or that he appreciated the materiality of the article. Mr. Shirley clearly remembered that the initial units, including the one referred to in the *Post-Dispatch* newspaper article, were not sold or offered for sale. Moreover, he knew that the units described in the article had no door switches, as did the device he sought to patent. Further, RFT presented no evidence establishing that other persons owing a duty to the Patent Office both were aware of the newspaper article and appreciated its potential significance.

47. RFT has failed to establish inequitable conduct with regard to the prosecution of the '670 Patent as well.

D. Attorneys' Fees

48. The court does not find this case to be "exceptional" within the meaning of 35 U.S.C. § 285 such that an award of reasonable attorneys' fees to the prevailing party is warranted.

III. CONCLUSION

For the reasons discussed above, I conclude that (1) Defendant has not infringed Plaintiff's U.S. Patent No.

4,682,155 or Plaintiff's U.S. Patent No. 5,268,670; (2) U.S. Patent No. 4,682,155 is not invalid under 35 U.S.C. § 102; and (3) RFT has failed to show inequitable conduct before the United States Patent and Trademark Office sufficient to declare U.S. Patent No. 4,682,155 and U.S. Patent No. 5,268,670 unenforceable.

IT IS ORDERED:

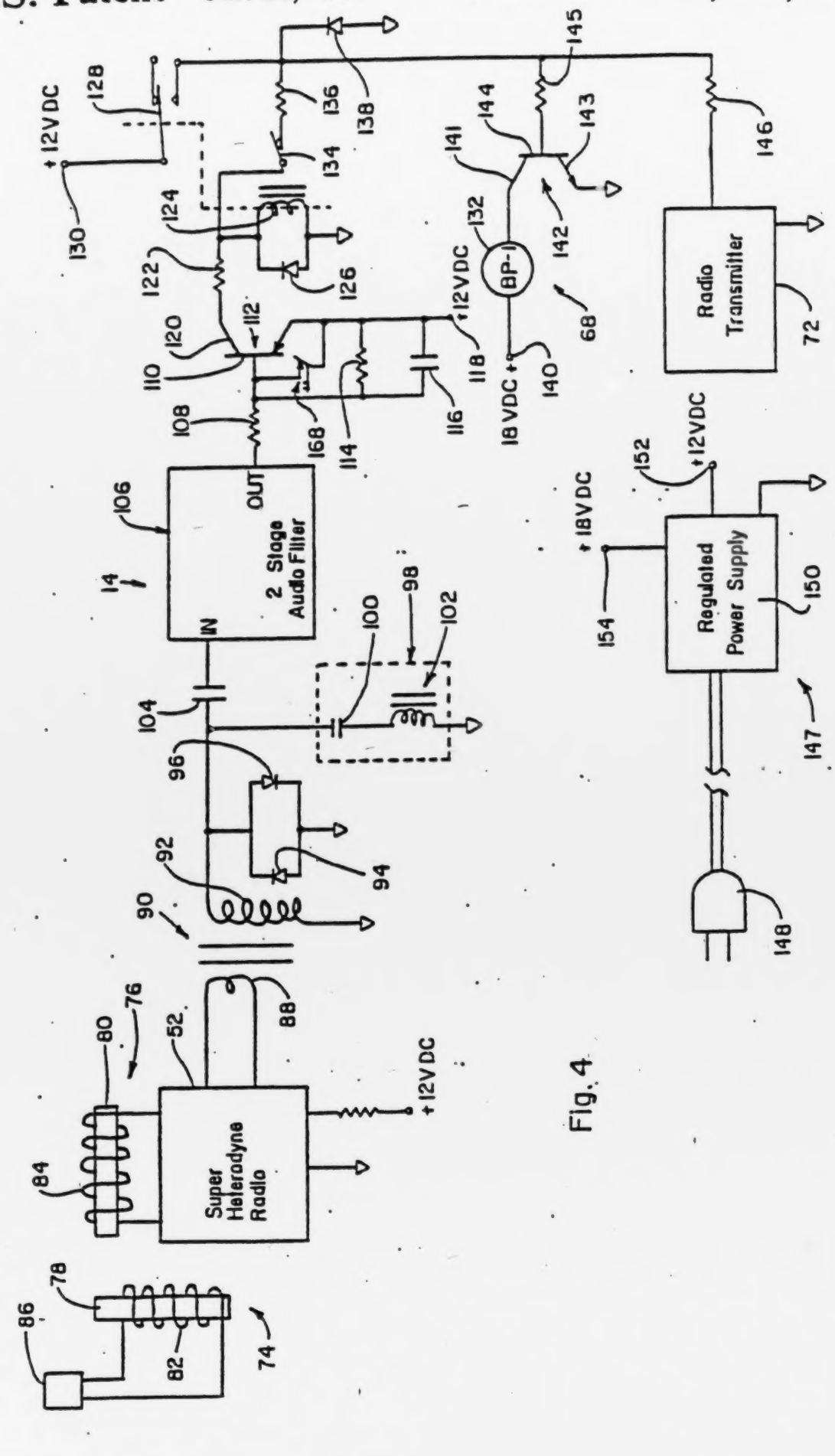
1. Judgment shall be entered against Plaintiff, and in favor of Defendant, on Plaintiff's infringement claims for the reason that Defendant has not infringed Plaintiff's U.S. Patent No. 4,682,155 or Plaintiff's U.S. Patent No. 5,268,670. On Defendant's counterclaims against Plaintiff, judgment shall be entered against Defendant and in favor of Plaintiff for the reasons that U.S. Patent No. 4,682,155 is not invalid under 35 U.S.C. § 102 and RFT has failed to show inequitable conduct before the United States Patent and Trademark Office sufficient to declare U.S. Patent No. 4,682,155 and U.S. Patent No. 5,268,670 unenforceable.

2. Judgment shall be withheld pending Magistrate Judge Piester's resolution of Plaintiff's application (filing 312) for fees pursuant to Judge Piester's prior order (filing 283).

DATED this 26th day of July, 1999.

BY THE COURT:

/s/ Richard G. Kopf
Richard G. Kopf
United States District Judge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68
140
18VDC
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72
152
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154
Regulated Power Supply
150
147
148
106
14
IN
OUT
2 Stage Audio Filter
100
98
102
104
96
92
94
90
88
76
80
52
+12VDC
84
Super Heterodyne Radio
86
78
82
74
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Fig. 4

United States Court of Appeals
for the Federal Circuit

ORDER

(Filed Oct. 21, 2003)

A petition for rehearing having been filed by the APPELLANT,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED.

The mandate of the court will issue on October 28, 2003.

FOR THE COURT,

/s/ Jan Horbaly
Jan Horbaly
Clerk

Dated: October 21, 2003

cc: Vincent L. Carney
Jane C. Schlicht

SENIOR TECH V R.F. TECH, 00-1089, -1090
(DCT – 97-CV-3241)

* *
* Note: Pursuant to Fed. Cir. R. 47.6, this order *
* is not citable as precedent. It is a public record. *
* *

PLAINTIFF'S TRIAL EXHIBIT 1

United States Patent [19] [11] **Patent Number:**
Shirley **4,682,155**
[45] **Date of Patent:**
Jul. 21, 1987

[54] **PERSONNEL SECURITY SYSTEM**

[75] Inventor: John R. Shirley, Crestwood, Mo.

[73] Assignee: Central Security Mfg. Corp., Fenton, Mo.

[21] Appl. No.: 818,260

[22] Filed: Jan. 13, 1986

[51] Int. Cl.[4] G08B 13/08; G08B 13/18

[52] U.S. Cl. 340/573; 340/522; 340/545; 340/572

[58] Field of Search 340/573, 572, 545, 522

[56] **References Cited**
U.S. PATENT DOCUMENTS

3,163,856	12/1964	Kirby	340/573
3,665,448	5/1972	McGlinchey et al.	340/545
3,972,320	8/1976	Kalman	340/573
4,063,410	12/1977	Welling	340/573
4,095,214	6/1978	Minasy	340/572
4,314,240	2/1982	Schnüg	340/573
4,476,461	10/1984	Carubia	340/545
4,555,696	11/1985	Brown	340/572
4,598,275	7/1986	Ross et al.	340/573

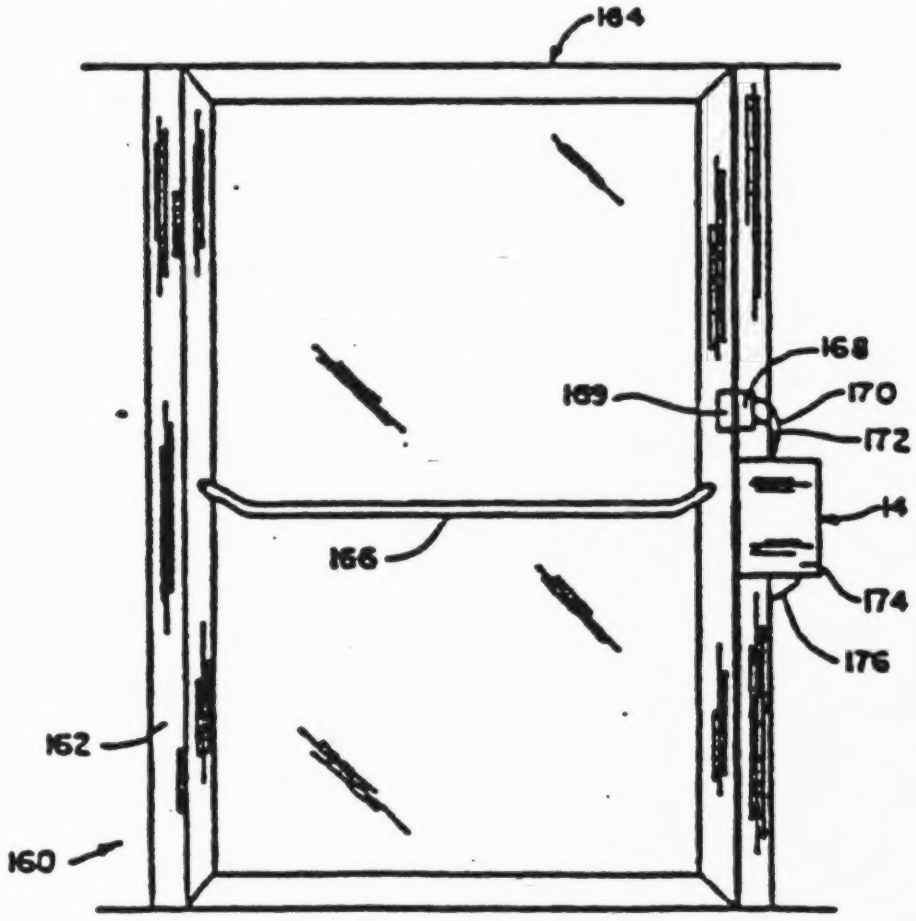
Primary Examiner – Glen R. Swann, III

Attorney, Agent, or Firm – Haverstock, Garrett & Roberts

[57] **ABSTRACT**

A security sensing system monitors the passage of persons through a door or like opening. A transmitter module having means for transmitting an omnidirectional signal is installed on persons to be monitored and a sensing module for installing adjacent to a door opening to be monitored. The sensing module operates an alarm, but only when the door is opened by a person equipped with a trigger module on his person.

18 Claims, 7 Drawing Figures



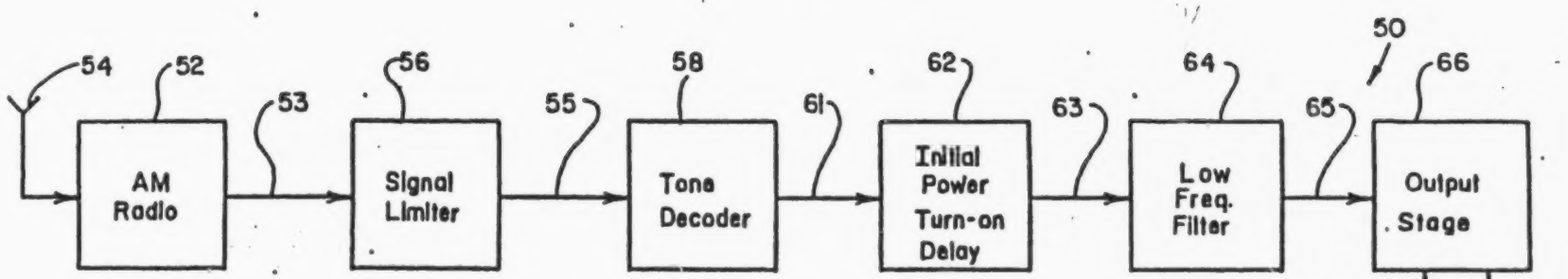


Fig. 3

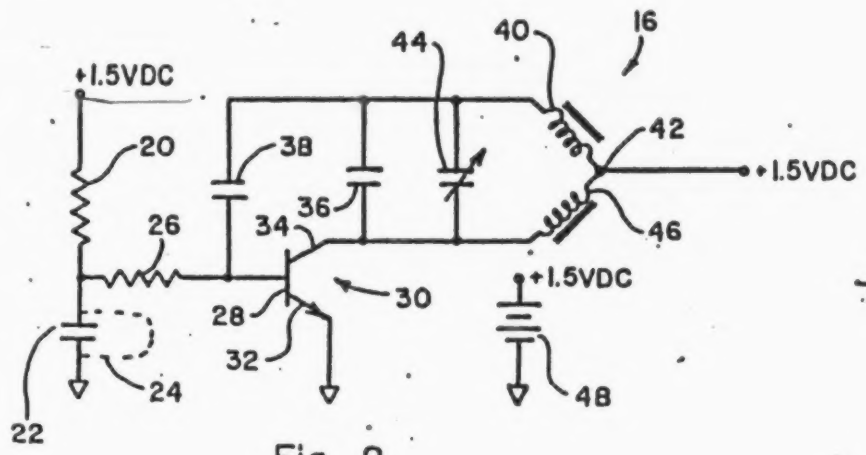


Fig. 2

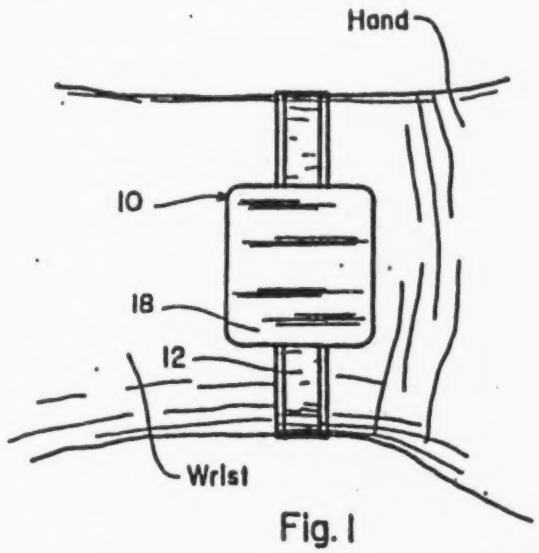
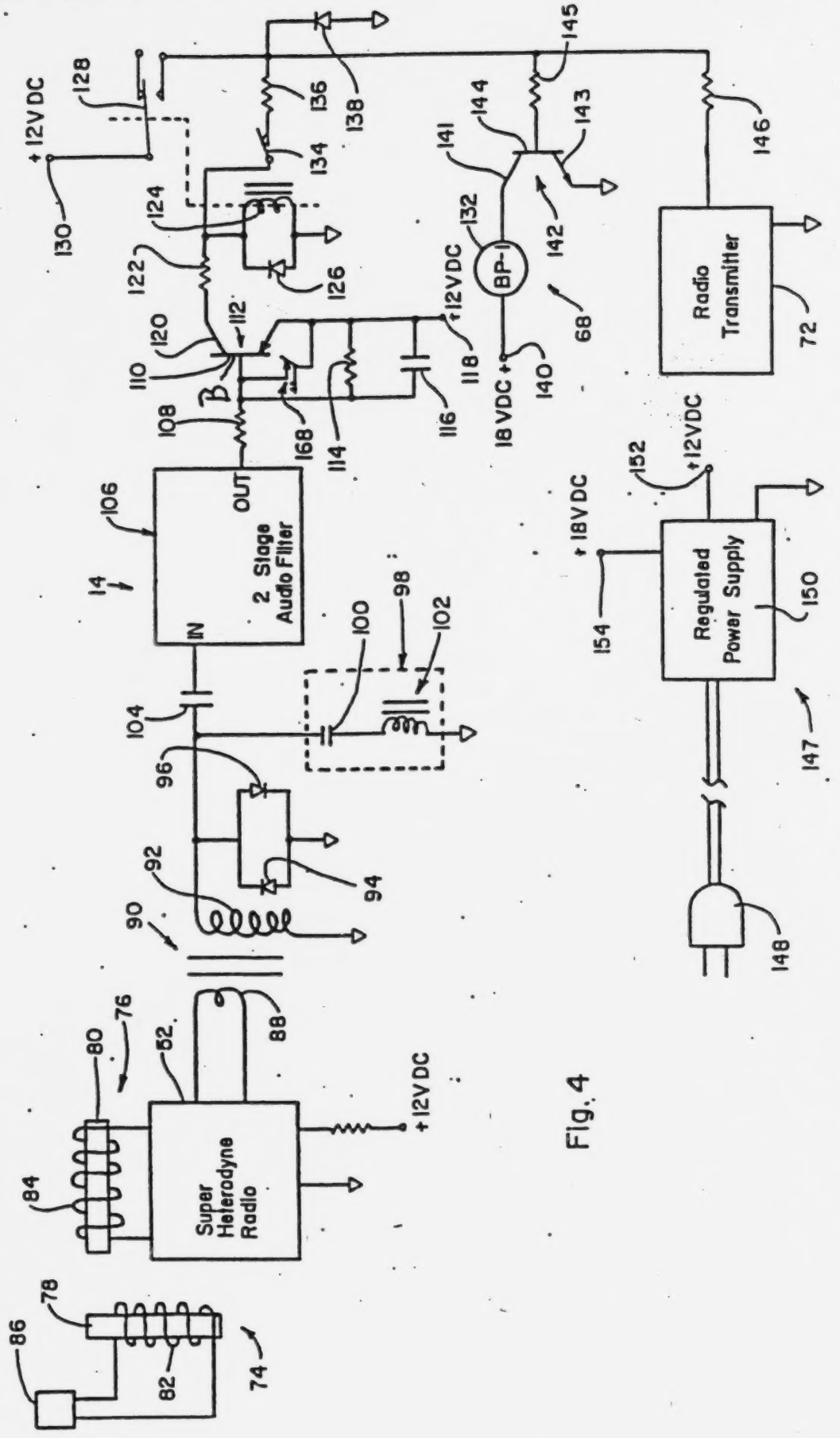


Fig. 1


+12V DC
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130
136
138
134
145
124
126
122
112
120
110
108
106
14
IN
OUT
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168
114
116
118
+12VDC
BP-1
132
141
144
143
142
140
+18VDC
68
146
Radio Transmitter
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+18V DC
154
+12VDC
152
Regulated Power Supply
150
147
148
100
98
102
104
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52
76
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84
Super Heterodyne Radio
+12V DC
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78
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74

Fig. 4

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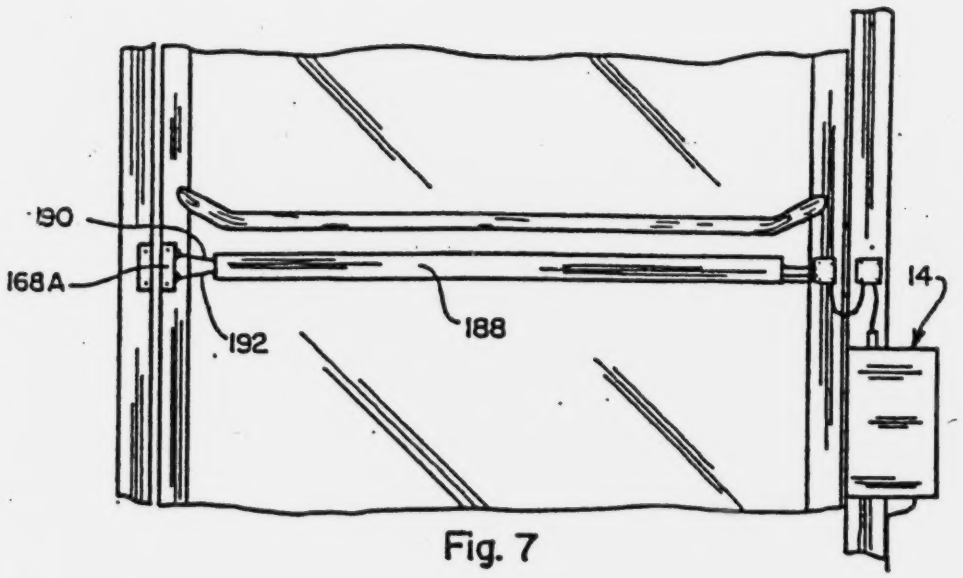

Fig. 7

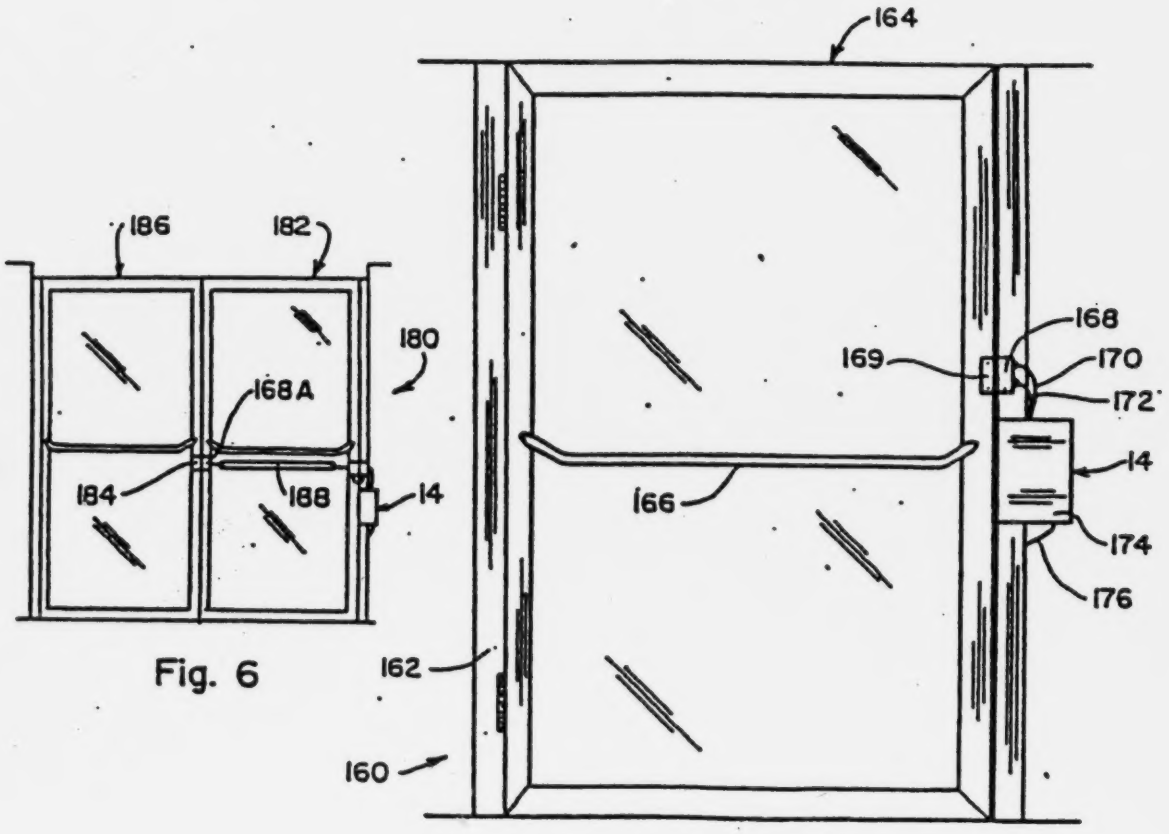

Fig. 6

Fig. 5

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PERSONNEL SECURITY SYSTEM

The present invention relates generally to personnel security systems and more specifically to a personnel security system for use in nursing homes for the aged, institutions for the feeble-minded and mentally deficient, and similar places where there is a need to alert the staff to any unauthorized departure of a resident through a door such as through an outside door. The present system includes portable units or trigger modules worn on the wrists of the residents being monitored, which units are constructed to transmit omnidirectional signals over a limited range such as a few feet, and a receiver unit or module for mounting on or adjacent to a door to be monitored, which receiver unit is constructed to receive signals transmitted by the trigger modules whenever a resident equipped with a trigger module tries to exit the premises by opening the door and passing therethrough.

PRIOR ART

There are many known systems that are used to signal the occurrence of some condition for some reason. For example, there are systems that are used to prevent shoplifting by attaching a transmitter device to certain articles of merchandise in a store, see for example the system disclosed in McGlinchey et al U.S. Pat. No. 3,665,448; there are transmitter/receiver systems used as patient monitoring systems that transmit information from means attached to or worn by a patient as to one or more conditions of the patient's body such as body temperature or pulse rate and such systems may include means for transmitting information to identify a particular patient whose transmission is being sent, see for example the system disclosed in Kalman U.S. Pat. No.

3,972,320. There are also occupancy monitoring type systems used by stores, hotels and other public places to keep a record of the occupancy use being made of certain facilities and so forth, see for example the system disclosed in Carubia U.S. Pat. No. 4,476,461. There are systems used on wristwatches to transmit information for activating a remote electronic circuit for some purpose such as to alert the police of a robbery or other emergency situation, see Welling U.S.Pat. No. 4,063,410. Another, more complicated, prior art system used for locating persons is disclosed in Schnüg Pat. No. 4,314,240. All known prior art systems are designed for very specific purposes and to provide certain specific kinds of information, but no known system is designed specifically for monitoring the movements of certain persons such as certain residents of a nursing home through specific doors and includes simple transmitter modules to be worn on the wrists of the residents being monitored, which modules continuously transmit omnidirectional signals that are received by a receiver unit located on or adjacent to the door or doorway, but only when the door is opened by a person so equipped. This is done to alert the staff of the institution that one of its residents is making an unauthorized exit. Because of the high cost of nursing home care and the kind of trouble enfeebled persons can get into if they are left to their own devices, it is important to provide relatively inexpensive, disposable, yet highly reliable, means to monitor certain actions of such residents in order to keep track of them and to keep them in a safe controlled environment. The present system meets these requirements.

The present system includes a wrist worn trigger module which is adapted to be attached to a wristband, such as to a plastic hospital type wristband, which can be

locked onto the wrist and cannot be easily removed by the resident without a special tool. The system also includes a receiver module for mounting on or adjacent to a door or doorway to be monitored. The transmitter and receiver modules preferably have good omnidirectional transmitting and receiving characteristics, and the receiving module can be installed for use on single door doorways and on double door doorways with some modification.

It is a principal object of the present invention to provide a relatively inexpensive, easy to install reliable means for knowing when a resident of a nursing home, hospital, asylum or other type institution opens and is departing through an unauthorized doorway.

Another object is to provide means for alerting the staff of a nursing home or like institution when a resident thereof equipped with the subject system opens an exit door equipped with suitable receiver means.

Another object is to reduce the cost of keeping track of residents of nursing homes and the like.

Another object is to provide transmitter means having omnidirectional transmission characteristics designed to be worn on the wrist of a person.

Another object is to provide a relatively inexpensive, compact, lightweight, sealed, battery operated transmitter device capable of operating over an extended period of time before needing to be replaced.

Another object is to provide a disposable transmitter device to be worn by residents of institutions such as nursing homes and the like to alert the staff when a resident is attempting to exit the premises.

Another object is to provide a waterproof battery operated transmitter device capable of transmitting a relatively low power omnidirectional radio frequency signal over a relatively short distance for an extended period of time.

Another object is to provide a relatively low power transmitter device capable of operating for an extended period of time on a relatively small battery source.

Another object is to provide a disposable sealed transmitter device which can be stored in a deactivated condition until ready for use in order to conserve battery life.

Another object is to provide a disposable battery operated transmitter which can be relatively easily activated to place it in operating condition.

Another object is to teach the construction of a relatively small transmitter device which can be relatively simply and easily checked for operating accuracy.

Another object is to teach the construction and operation of a relatively simple yet rugged transmitter having a minimum number of parts.

Another object is to teach the construction and operation of a relatively inexpensive receiver for mounting on or adjacent to a door, which receiver may have an antenna portion for mounting on the door itself.

Another object is to provide a receiver module which can be effectively installed for use with single and double door openings.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and advantages of the present invention will become apparent after considering the following detailed specification in conjunction with the accompanying drawings wherein:

FIG. 1 is a front view of a trigger module and a mounting strap therefor shown mounted on the wrist of a person;

FIG. 2 is a schematic circuit diagram of the circuit of the trigger module shown in FIG. 1;

FIG. 3 is a block diagram of the circuit of a receiver module used for receiving signals transmitted by the trigger module of FIGS. 1 and 2;

FIG. 4 is a schematic circuit diagram of the same receiver module shown in FIG. 3;

FIG. 5 is an elevational view showing an exit at an institution such as a nursing home equipped with a receiver module such as shown in FIGS. 3 and 4;

FIG. 6 is an elevational view similar to FIG. 5 but showing the receiver module mounted for use at a double door opening; and,

FIG. 7 is an enlarged fragmentary elevational view of the central portion of the right hand door shown in FIG. 6.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings more particularly by reference numbers, number 10 identifies a transmitter module or unit constructed to be attached to a wristband 12 such as a plastic hospital wristband to be fixedly attached to

the wrist of a resident of a nursing home or like institution. The typical wristband 12 is constructed to be secured about the wrist of the resident in such a manner that it cannot be easily removed by the resident, and it is intended that the wristband remain on the resident at all times and can only be removed by a staff person using a special tool for this purpose. The idea is to attach to the wristband 12 the transmitter module 10 and to attach such to the wrist of each person who should not leave the nursing home without being promptly detected so that they can be overtaken before they leave the premises. In today's world the typical nursing home may have any number of residents that need special monitoring, any number of exit doors, and a limited staff to keep track of the residents. Ordinarily it is not necessary to have a transmitter on the wrist of every person in the nursing home since many people will be happily situated and will not be inclined to try to leave without permission. However, there may be a number of residents who, for some reason or other, may try to wander off intentionally or unintentionally, and it is this group of residents for whom the present invention is primarily directed. The idea is that if such a resident opens a so-called unauthorized door, a door through which the residents should not pass without permission, the transmitter on his or her wrist which will be continuously transmitting, will have its signal picked up by receiver or sensing module 14 located on or adjacent to the door as soon as the door is opened. The signals so received will be used to energize some kind of alarm means at a remote station such as at a nursing station to alert the person or persons on duty that one of the residents is passing through the unauthorized doorway. This will enable the staff to retrieve the resident before the resident has gone very far.

The transmitter module 10 is preferably a relatively inexpensive, disposable battery operated module which continuously during the life of its battery transmits a low power signal over a relatively short distance such as over a few feet or so. Because of the way the transmitter is constructed, and especially the antenna portion thereof, the signals are transmitted omnidirectionally, as will be explained. This is done so that regardless of the orientation of the transmitter module 10 as it passes through the doorway, its signal will be picked up by antenna means associated with the receiver means 14, and the resident will not be able to defeat the system by orientating the transmitter module 10 in any particular orientation.

It is important to the present construction that the transmitter module 10 be relatively inexpensive, that it be battery operated, be a sealed unit so that it will not be damaged or made inoperative by immersing it in water or otherwise exposing it to the elements, and in some cases it may be desirable to make the housing for the transmitter module 10 appear to look like the face of a clock or some other well known device so that the person wearing it may actually think that he is wearing a wristwatch. It is also important that the wristband 12 to which the transmitter module 10 is attached be a band that can be more or less permanently attached to the wrist of the resident so that the resident cannot easily remove the device even when taking a shower or a bath or at night. This means that the resident will have the transmitter module 10 on his person at all times and hence his movements through unauthorized doors will be constantly monitored.

The details of the construction and operation of the transmitter and receiver modules 10 and 14 will be described in connection with drawings. The system will also

be described in connection with its use on a door opening having a single door member and on a door opening that has two adjacent door members. The differences between use on a single door opening and a double door opening will be described in detail and are necessary because institutions have both types of door openings, and it is necessary that the transmitter module 10 be required to be moved close enough to a receiving means or antenna so that a signal will be picked up in the case of a double door opening regardless of which door member is opened by the resident. It should be noted that with the present system a resident equipped with a transmitter module can move as close as he or she wants to an unauthorized door so long as the door is not opened without the receiver module being enabled to receive the transmitted signal. In other words there must be some movement of a door member to operate switch means in the circuit of the receiver before the receiver will be able to receive a signal and produce a response for sending to the nurse's station. If some door movement were not required then every time a resident equipped with a transmitter module 10 came close to a door a signal would be received and a response sent and this would be undesirable.

FIG. 1 shows the transmitter module 10 on the wristband 12 extending around a wrist. FIG. 2 shows schematically a circuit 16 for the transmitter module 10. The circuit 16 is packaged in a plastic or like container 18 which container is preferably relatively small approximating the size of a wristwatch. The container 18 is preferably sealed to be air and water tight and may be decorated to look like a wristwatch. The circuit 16 for the module 10 is constructed to transmit a radio frequency signal preferably at or about 510 kilohertz which signal is audio modulated at

a frequency in the range from about 770-990 hertz. Such a signal is outside the low end of the broadcast band. The circuit 16 (FIG. 2) includes an input resistor 20 connected to a DC source and to ground through capacitor 22. A wire loop 24, shown in dotted outline, is connected across the capacitor 22 with the exposed end of the loop 24 extending from the plastic case 18. When the device is constructed and encased, the wire loop 24 forms a short circuit across the capacitor 22 to greatly reduce the flow of current from the battery and hence the loop 24 prevents the normal drain of current from the battery. This condition exists until the device is to be activated. When the device is to be installed on a resident the staff person doing the installing activates the battery by cutting off the exposed portion of the loop 24 which is the portion that extends from the case. This can be done using side cutters or a pair of scissors. When this is done the circuit is energized and transmits the signal.

The transmitter circuit 16 includes another input resistor 26 connected on one side to the connection between the resistor 20 and the capacitor 22 and has its opposite side connected to base element 28 of transistor 30. The emitter 32 of the transistor 30 is grounded, and the collector 34 is connected to one side of a capacitor 36. The transistor base 28 is also connected to one side of another capacitor 38, and the capacitors 36 and 38 have their opposite sides connected together as shown. This common connection is connected to one side of an inductor 40, the opposite side of which is connected to a 1.5 volt battery connection 42. The inductor 40 is also connected to one side of a variable tuning capacitor 44 which has its opposite side connected to the collector electrode 34 of the transistor 30. This connection is also made to one side of a

second inductor 46 which has its opposite side connected to the 1.5 volt battery connection 42. The inductors 40 and 46 are preferably oriented in the module 10 to be physically located at or near right angles to each other in order to make the RF radiation pattern of the transmitted signal more uniform and omnidirectional and to reduce null conditions. At the time the transmitter module 10 is constructed the variable capacitor 44 is set to establish the frequency for the transmitted signal. This is preset and adjusted before the transmitter circuit 16 is sealed into the housing or case 18.

The transmitter module 10 also contains a battery 48, which is preferably a relatively small, low power battery capable of supplying sufficient energy to energize the transmitter module 10 to transmit a continuous signal for an extended period of time such as for a minimum of at least three months or longer. This means that after a resident has worn the transmitter module 10 for about three months the module 10 should be replaced by a new module to ensure continuing satisfactory service. When this is done the old module can be disposed of or, if desired, can be sent back to the manufacturer for a new battery. Because of the simplicity and small expense to construct the transmitter module 10 it is expected that repair of the modules even by replacing batteries may not be practical or cost effective, and it is anticipated that a new module will be put into operation and installed when the anticipated minimal usable life of the battery has been used up. This will also provide the residents with clean units from time to time.

FIG. 3 is a block diagram of the circuit for the receiver or sensing module 14 for the subject system. The sensing module 14 has a circuit 50 which includes an AM radio

receiver portion 52 connected to an antenna 54 mounted on or adjacent to a door or doors of an opening to an institution or the like. The details of the antenna means will be described later. The AM receiver 52 is tuned to the transmitting frequency of the transmitter module 10, i.e., 510 kilohertz. The output of the receiver 52 is fed on lead 53 to a signal limiter circuit 56 which produces therefrom a constant amplitude output which is fed on lead 55 to and through a tone decoder circuit 58. The output of the tone decoder circuit 58 is fed on lead 61 to a circuit identified as the initial power turn-on delay circuit 62. The output of the circuit 62 is fed on lead 63 to the input to a low frequency filter circuit 64 the output of which is connected by lead 65 to an output circuit stage 66. The output circuit stage 66 is in turn connected to supply an output signal on lead 67 to energize an alarm device 68 to alert a nurse or other staff person at a suitable location such as the nursing station that a resident is trying to pass through an unauthorized door. The alarm circuit 68 also has a reset connection on lead 70 that is connected back to the output stage 66. This connection enables the circuit to be reset after an alarm is detected so that the device is again able to produce an alarm. The alarm 68 may also be connected to an RF digital transmitter 72 for sending the signal to other stations or to a center where a record is kept of each alarm event. The audio modulation of the radio frequency signal can also be used to identify each person having a transmitter so that not only will the alarm be indicated but the system will also be able to identify particular residents. This feature is optional and may not be required by all institutions.

The circuit described above in block form has certain features which recommend it for the present purpose

including having high immunity to random noise, tight control of the tone decoder frequency, and wireless provision for remote alarm reporting at distant nursing stations. The circuit also enables operation at or below the low end of the broadcast radio spectrum resulting in reasonable costs for capital equipment which is an important factor that makes the present system cost effective for nursing homes and other institutions. The present system therefore provides security for wandering residents at minimal personnel and other costs, and because of the provision of the two ferrite inductors 40 and 46 at right angles in the transmitter modules 10, the system is relatively difficult to defeat should a resident trying to exit orient his transmitting module in such a way as to try to avoid signal reception. The receiving or sensing module 14 is also preferably constructed of relatively few parts and can be made as a compact unit for installing on a doorjamb or adjacent to a doorjamb or even on a door in some circumstances. It is also possible because of its relatively small size to construct the sensing module 14 to blend into the decor of the building so that it is not easily seen, and it is contemplated to recess it into a wall for even better hiding. The better the sensing modules are hidden, the less likely that somebody will try to defeat the system by damaging the receiver. However, since the receiver module is a more or less permanent part of the system it is preferred that it be installed in such a manner that it can be removed for repair and maintenance if necessary.

FIG. 4 is a more detailed diagram of the circuit for the receiver module 14. In the circuit diagram of FIG. 4 ferrite inductors 74 and 76 including ferrite cores 78 and 80 and respective coils 82 and 84 are mounted as shown. The coil 82 on the inductor 74 is connected to a jack 86 for an

external sensor and the coil 84 of the inductor 76 is shown connected directly to the superheterodyne AM radio receiver 52. Other types of receivers including tuned radio frequency as well as FM receivers could also be used. The output of the receiver 52 is applied to primary coil 88 of transformer 90 which has its secondary winding 92 grounded on one side and connected on the opposite side to the input of a circuit which includes a pair of oppositely polarized diodes 94 and 96 which are grounded as shown. The non-grounded side of the transformer secondary 92 is also connected to one side of an optional circuit 98 for preventing damage due to transient conditions and which includes capacitor 100 connected in series with inductor or choke 102. The transformer secondary 92 is also connected through another capacitor 104 to the input of a two stage audio filter circuit 106 which is constructed and adjusted to have an operating range between about 770 hz and 990 hz. The output of the filter circuit 106 is connected through resistor 108 to base element 110 of transistor 112. The transistor 112 is connected to a base to emitter biasing circuit formed by parallel connected resistor 114 and capacitor 116 which are connected to a DC potential terminal 118 which may be from a battery or from the output of a rectifier circuit.

The collector 120, of the transistor 112 is connected through another resistor 122 to one side of relay circuit shown as including a relay coil 124 connected in parallel with diode 126, the opposite sides of which are grounded. The relay coil 124 operates a relay contact 128 which is connected into a circuit between DC potential at terminal 130 and an output circuit which includes an audio beeper 132 and the transmitter circuit 72. The diode 126 is included to prevent back EMFs or voltages from damaging

the transistor 112. The high voltage side of the relay coil 124 is also connected through reset pushbutton switch 134, resistor 136 and grounded diode 138. This circuit has a connection through the normally open side of the relay switch 128 to DC voltage terminal 130 when the relay is energized. When the pushbutton switch 134 is actuated it disconnects power from the relay coil 124 deenergizing it and opening the relay contact 128.

One side of beeper 132 is connected to another DC voltage terminal 140 and the opposite side is connected to collector electrode 141 of transistor 142. The emitter 143 of the transistor 142 is grounded and the base 144 of the transistor 142 is connected through resistor 145 to one side of the relay contact 128. Application of positive voltage to the base of the transistor 142 will turn on the transistor 142 to conduct and in so doing will energize the beeper 132. The beeper 132 will therefore be energized whenever a resident equipped with a transmitter is trying to pass through an unauthorized doorway and in so doing causes a signal to be received by the receiver 14 to energize the relay 124. The radio transmitter 72 will also be activated at the same time as the beeper 132 to transmit a signal to other nurse's stations if there are such in the institution. This is done to make the alarm more general and, if necessary, to keep track of alarms. The transmitter 72 is connected to the DC source connection 130 through another resistor 146 connected as shown.

The circuit of FIG. 4 also includes a power supply portion 147 which is shown as including a plug-in receptacle 148. The power supply is shown as being a regulated twelve volt power supply 150 having a twelve volt DC output at terminal 152 and an eighteen volt DC output at terminal 154.

FIG. 5 shows a door assembly 160 having a doorjamb 162 and a single door member 164 hingedly mounted therein. Such doors are common as exit doors for institutions such as nursing homes and the like. The door 164 has an operating handle 166 which is pushed to unlatch the door so it can be opened and a switch 168 is mounted on the doorjamb 162 adjacent to the non-hinged side of the door 164 which cooperates with an actuator member 169 located on the door 164 as shown. When the door is closed the switch 168 is closed and when the door is open the switch 168 opens. The switch 168 may be a mechanical switch, an electronic switch or a magnetic switch. The switch 168 is connected by leads 170 and 172 to a housing 174 in which the receiver circuit 14 is located. The housing 174 has an output cable 176 which connects it to a remote nursing station where the alarm or buzzer is located and it also has a connection to a source of power. When the door 164 is closed the receiver circuit 16 is incapable of receiving signals from the transmitters 10 but when the door 164 is open it can receive such signals. The switch 168 is a normally closed switch and is connected into the circuitry of the receiver 14 between the base 110 and the emitter of the transistor 112. When the door is closed, the switch 168 (see also FIG. 4) is not actuated (closed) and will short between the base and the emitter of the transistor 112. This prevents the transistor 112 from energizing the relay 124.

FIGS. 6 and 7 show the receiver 14 mounted for use on a double door opening 180. In this case switch 168A is mounted on the outboard side of door member 182 and is adjacent to actuator 184 located on the other or second door member 186. In the double door construction 180 the door member 182 also has a sensor strip 188 extending

thereacross. The sensor strip 188 contains leads 190 and 192 that connect to the switch 168A, and the strip 188 also serves as an antenna so that the resident will not be able to defeat the system by trying to create too great a distance between the transmitter 10 on his or her wrist and the sensor or pick-up connected to the receiver 14. The strip 188 can be adhesively or otherwise attached to the door 182. It is also contemplated to mount a similar receiver unit on each opposite side of the double door opening and connect them together by a wire that extends around or over the door opening. In such case one of the receivers may be considered as the master receiver and the other as the slave. This construction will eliminate the need for attaching a sensor strip such as the strip 188 to one of the door members.

Thus there has been shown and described a personnel security system which fulfills all of the objects and advantages sought therefor. It will be apparent to those skilled in the art, however, that many changes, modifications variations, and other uses and applications for the present system are possible. All such changes, modifications, variations, and other uses and applications which do not depart from the spirit and scope of the invention are deemed to be covered by the invention which is limited only by the claims which follow.

What is claimed is:

1. A security sensing system for monitoring the passage of persons through a door or like opening comprising:

a transmitter module for installing on persons to be monitored, a sensing module for installing adjacent to a door opening to be monitored, and

means responsive to the opening of the door to enable the sensing module to respond to the signal transmitted by the transmitter module to produce an output response, and alarm means energizable in response to the production of the output response to produce an alarm condition,

the transmitter module including a housing having a transmitter circuit, a source of power for the transmitter circuit and transmitter antenna means installed therein,

the sensing module including a receiving circuit and associated sensing means located adjacent to the door opening to be monitored, and

said means responsive to the opening of the door including means to enable the receiving circuit in the sensing module whereby the receiving circuit can respond to signals transmitted by the transmitter module to produce a response for energizing the alarm means.

2. The security sensing system of claim 1 wherein the transmitter antenna means includes a pair of inductors mounted in the housing at substantially right angles.

3. The security sensing system of claim 1 wherein the housing for the transmitter module is a sealed housing.

4. The security sensing system of claim 1 wherein the door opening accommodates two door members and the sensing module is located adjacent to the door opening and includes an elongated sensing member mounted extending transversely across at least one of the door members in the door opening.

5. The security sensing system of claim 1 wherein the sensing module includes a radio frequency receiver having an input connected to the sensing means, an output including signal limiting and filtering means and relay means energizeable when a signal is received from the transmitter module to energize the alarm means.

6. Means to monitor a doorway of a nursing home or other institution in order to produce an alarm when certain residnets [sic] try to pass therethrough comprising

a transmitter device including a mounting band therefor to be worn on the wrist of the residents to be monitored, said transmitter device having a housing with a modulating circuit, a transmitter radiator and a battery source located therein,

a receiving device for mounting adjacent to the doorway including a housing and a receiving circuit therein, a signal sensor operatively connected to the receiving circuit, means for supplying power to the receiving circuit, means to enable the receiving circuit, and an output for the receiving circuit,

an alarm producing device operatively connected to the output of the receiving circuit, and

said means to enable including switch means operatively connected to the receiving circuit, said switch means being mounted in association with the doorway and having a first condition when the doorway is open and a second condition when the doorway is closed, the first condition of the switch means operating to enable the receiving circuit.

7. The means to monitor of claim 6 wherein the transmitter device includes a weathertight housing having

a severable loop of wire extending therefrom, the loop having an operative connection to the modulating circuit therein such that when unsevered the loop prevents energizing of the transmitter device, severing of the loop operating to energize the transmitter device.

8. The means to monitor of claim 6 wherein the radiator in the transmitter device includes a pair of angularly related inductor elements.

9. The means to monitor of claim 6 wherein the modulating circuit is tuned to transmit a signal from the radiator at a radio frequency that is outside of the broadcast band.

10. The means to monitor of claim 6 wherein the transmitter device produces a radio frequency output audio modulated at a frequency between about 770 to 990 hertz.

11. The means to monitor of claim 6 wherein the receiving circuit includes a radio frequency receiver circuit portion.

12. The means to monitor of claim 6 wherein the signal sensor includes a pair of angularly oriented inductor elements.

13. The means to monitor of claim 6 wherein the receiving circuit includes signal limiting and signal filtering means, and an output circuit stage, and means including relay means operatively connected to the output circuit stage, said alarm producing means being energizable under control of the relay means.

14. The means to monitor of claim 13 including a radio transmitter operatively connected to the relay means

and energizable with the alarm producing means to transmit a signal to remote locations.

15. The means to monitor of claim 6 wherein the doorway being monitored has two adjacent door members, the receiving device being mounted adjacent one of the door members and the switch means being mounted having a switch portion mounted on one of the door members and a switch actuator portion mounted on the other of said door members, said switch portion and said switch actuator portion being adjacent one another when the two adjacent door members are closed.

16. The means to monitor of claim 6 wherein the modulating circuit includes transistor elements.

17. The means to monitor of claim 6 wherein the receiving circuit includes transistor elements.

18. The means to monitor of claim 6 wherein the doorway being monitored is a relatively wide doorway and a separate receiving device is mounted adjacent each opposite side thereof, and means connecting the separate receiving devices on opposite sides of the doorway whereby one of the receiving devices operates as a master and the other as a slave receiving device.

* * *

(LOGO) **UNITED STATES DEPARTMENT OF COMMERCE**
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D. C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
06/818,260	01/13/86	SHIRLEY J	726

HAVERSTOCK, GARRETT & ROBERTS
611 OLIVE ST.,
ST. LOUIS, MO 63101

EXAMINER	
SWANN III, G	
ART UNIT	PAPER NUMBER
268	2

DATE MAILED: 10/31/86

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

[✓] This application has been examined [ ] Responsive to communication filed on _____ [ ] This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. [✓] Notice of References Cited by Examiner, PTO-892.
2. [ ] Notice re Patent Drawing, PTO-948.
3. [ ] Notice of Art Cited by Applicant, PTO-1449

4. [ ] Notice of Informal Patent Application, Form PTO-152

5. [ ] Information on How to Effect Drawing Changes, PTO-1474

6. [ ] _____.

Part II SUMMARY OF ACTION

1. [✓] Claims 1-18 are pending in the application.

   of the above, claims _____ are withdrawn from consideration.

2. [ ] Claims _____ have been cancelled.

3. [ ] Claims _____ are allowed.

4. [✓] Claims 1-18 are rejected.

5. [ ] Claims _____ are objected to.

6. [ ] Claims _____ are subject to restriction or election requirement.

7. [ ] This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.

8. [ ] Allowable subject matter having been indicated, formal drawings are required in response to this Office action.

9. [ ] The corrected or substitute drawings have been received on _____. These drawings

are [ ] acceptable; [ ] not acceptable (see explanation).

10. [ ] The [ ] proposed drawing correction and/or the [ ] proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been [ ] approved by the examiner, [ ] disapproved by the examiner (see explanation).

11. [ ] The proposed drawing correction, filed _____, has been [ ] approved. [ ] disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.

12. [ ] Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [ ] been received [ ] not been received [ ] been filed in parent application, serial no. _____; filed on _____.

13. [ ] Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. [ ] Other

PTOL-326 (Rev. 7-82) EXAMINER'S ACTION

Serial No. 818,260

Art Unit 268

1. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 11, claim 6, line 6, and claim 7, line 2, "transmitter" should read --'transmitting -- for consistency of nomenclature. In claim 1, line 14, and claim 5, line 3, it is not clear what is meant by "sensing means". It is not clear what is sensed. It is felt perhaps "sensing" should read -- receiving antenna -- . In lines 15-20 of claim 6, it is not made clear if the recited structure is the same as the "means to enable" of line 11. It is felt that perhaps, in line 15, -- said means to enable comprises -- should be inserted before "switch". In claim 4, line 4, it is not clear what is meant by "sensing member". In claim 7, there is no antecedent basis in the claim for "the transmitting circuit" (lines 4, 5-6, and 7). In claim 14, line 3, -- a -- should be inserted before "signal". In claim 18, line 2, "in" should read -- is -- . Claims 2-5 depend from claim 1 and claims 7-18, from claim 6.

2. The disclosure is objected to because of the following informalities:

lines 2-5 of page 9 are not understood. Since a capacitor blocks the flow of DC, it seems 24 would increase the current drain on the battery rather than decrease it. On page 13, line 9, "transmit" is not understood. Should this read -- transient -- ? On line 28, "EMFS" would be clear if it read -- EMFs -- .

Appropriate correction of the disclosure is required.

3. The Abstract of the Disclosure is objected to because in line 1, "for monitoring" should read -- monitors -- . In line 2, a period should be inserted after "opening" and "including a" should read -- A --. In line 3, -- is -- should be inserted after "signal". In lines 4-5, "for enabling" should read -- is installed -- . In line 5, the comma should be a period and "the" should be capitalized. In line 6, "including . . . to" should be deleted. In line 7, "operate" should read -- operates -- and a comma should be inserted after "alarm". Correction is required. See MPEP 608.01(b).

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kirby discloses a condition-responsive alarm device mounted on a person's wrist. Minasy, Brown, and Ross et al. disclose systems to monitor the location of selected persons. Mc Glinchey et al., Kalman, Welling, Schnüg, and Carubia were cited in the specification.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glen Swann whose telephone number is (703) 557-3374.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 557-3321.

/s/ Glen R. Swann III

G. Swann:pdw

703-557-3374

10-30-86

FORM PTO-892 (REV. 3-78) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

NOTICE OF REFERENCES CITED

SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
06/818 260	268	2

APPLICANT(S): Shirley

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	A	3163856	12-1964	Kirby	340	573	
	B	4095214	6-1978	Minasy	340	572	
	C	4555696	11-1985	Brown	340	572	
	D	4598275	7-1986	Ross et. al.	340	573	5-1983
✓	E	3665448	5-1972	McGlinchey et al.	340	545	
✓	F	3972320	8-1976	Kalman	340	573	
✓	G	4063410	12-1977	Welling	340	573	
✓	H	4314240	2-1982	Schnüg	340	573	
✓	I	4476461	10-1984	Carubia	340	545	
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT SPEC.
	L								
	M								
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER	DATE
Swann	10-22-86

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

A-106

EXHIBIT 514

Patents

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of	:	[Handwriting In Original Omitted]
John R. Shirley	:	
Serial No.: 818,260	:	Examiner: Glen Swann III
Filed: January 13, 1986	:	Group Art Unit 268
For: PERSONNEL SECURITY SYSTEM	:	[Certificate Of Service Omitted In Printing]

Last Office Action dated October 31, 1986

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

AMENDMENT

S I R:

In response to the Office Action dated October 31, 1986, Applicant hereby amends his above-identified patent application as follows:

IN THE SPECIFICATION

Page 5, line 17, after "in" delete -- of --.

Page 5, line 29, change "transmitting" to -- transmitter --.

Page 6, line 16, delete "means" and insert -- or sensing module 14 --.

Page 6, line 24, change "transmitting" to -- transmitter --.

Page 7, line 1, change "transmitting" to -- transmitter --.

Page 7, line 3, change "receiving" to -- receiver --.

Page 7, line 8, change "transmitting" to -- transmitter --.

Page 7, line 12, change "transmitting" to -- transmitter --.

Page 7, line 16, change "transmitting" to -- transmitter --.

Page 7, line 24, change "transmitting" to -- transmitter --.

Same line, change "receiving" to -- receiver --.

Page 8, line 6, change "transmitting" to -- transmitter --.

Page 8, line 16, change "transmitting" to -- transmitter --.

Page 8, line 18, change "transmitting" to -- transmitter --.

Page 11, line 1, change "transmitting" to -- transmitter --.

Page 13, line 9, change "transmit" to -- transient --.

Page 13, line 28, change "EMFS" to -- EMFs --.

IN THE CLAIMS

Claim 1 (as once amended). A security sensing system for monitoring the passage of persons through a door or like opening comprising:

a [trigger] transmitter module for installing on persons to be monitored, a sensing module for installing adjacent to a door opening to be monitored, and means responsive to the opening of the door to enable the sensing module to respond to the signal transmitted by the [trigger] transmitter module to produce an output response, and alarm means energizable in response to the production of the output response to produce an alarm condition,

the [trigger] transmitter module including a housing having a transmitter circuit, a source of power for the [transmitting] transmitter circuit and [transmitting] transmitter antenna means installed therein,

the sensing module including a receiving circuit and associated sensing means located adjacent to the door opening to be monitored, and [,]

said means responsive to the opening of the door including means to enable the receiving circuit in [response to the opening of the door] the sensing module whereby the receiving circuit can respond to signals transmitted by the [trigger] transmitter module to produce a response for energizing the alarm means.

Claim 2, line 2, change "transmitting" to -- transmitter --.

Claim 5, line 5, change "trigger" to -- transmitter --.

Claim 6 (as once amended). Means to monitor a doorway of a nursing home or other institution in order to produce an alarm when certain residents try to pass therethrough comprising

a [transmitting] transmitter device including a mounting band therefor to be worn on the wrist of the residents to be monitored, said transmitter device having a housing with a modulating circuit, a [transmitting] transmitter radiator and a battery source located therein,

a receiving device for mounting adjacent to the doorway including a housing[,] and a receiving circuit therein, a signal sensor operatively connected to the receiving circuit, means for supplying power to the receiving circuit, means to enable to receiving circuit, and an output for the receiving circuit,

an alarm producing device operatively connected to the output of the receiving circuit, and

said means to enable including switch means operatively connected to the receiving circuit, said switch means being mounted in association with the doorway and having a first condition when the doorway is open and a second condition when the doorway is closed, the first condition of the switch means operating to enable the receiving circuit.

Claim 7, line 4, change "transmitting" to -- modulating --.

Claim 7, line 6, change "transmitting circuit" to -- transmitter device --.

Claim 7, line 7, change "transmitting circuit" to -- transmitter device --.

Claim 8, line 2, change "transmitting" to -- transmitter --.

Claim 9, line 1, after "monitor" insert -- of -- ; same line change "transmitting" to -- modulating --.

Claim 14, line 3, after "transmit" insert -- a --.

Claim 18, line 2, change "in" to -- is --.

IN THE ABSTRACT OF THE DISCLOSURE

Line 1, after "system" delete -- for --.

Line 1, change "monitoring" to -- monitors --.

Line 2, change "opening including a trigger" to -- opening. A transmitter --.

Line 3, after "signal" insert -- is --.

Line 5, change "monitored, the" to -- monitored. The --.

Line 6, delete -- including means for producing a response to --.

Line 7, change "operate an alarm but" to -- operates an alarm, but --.

REMARKS

Applicant acknowledges with appreciation the suggestions made by the Examiner regarding amendments to the specification, claims and abstract. Except for the noted instances, Applicant has made amendments to comply with these suggestions.

The specification has also been amended at various locations to clarify ambiguities, and to create consistency between the language of the claims and the specification and to correct informalities.

Claims 1, 2, 5, 6, 7, 8, 9, 14 and 18 have been amended to clarify ambiguities and to create consistency between the language of the claims and the specification.

The Examiner stated it is not clear what is meant by "sensing means" in claim 1, line 14 and claim 5, line 3. "Sensing means" refers to means such as to an antenna or like device which senses signals transmitted by the transmitter module and applies them to the input of the receiver circuit. See specification page 10 beginning at line 24. In claim 4, line 4, "sensing member" refers to strip 188 shown in Figs. 6 and 7 and discussed in the specification on page 15 beginning at line 23. Claim 6, line 15 has been amended to define "said means to enable including . . .", as suggested by the Examiner. In claim 7, line 4, "transmitter circuit" has been changed to "modulating circuit" to

agree with its antecedent in parent claim 6, and this overcomes this rejection.

The Examiner's query with regard to the operation of the capacitor 22 is noted. When the wire 24 is intact, the battery is connected through the resistor 20 to ground. This also means that the base 28 of transistor 30 is grounded so that the circuit cannot operate. The resistor 20 has a relatively high resistance in the order of 137K-ohms. This means that there will be some slight drain on the battery but not nearly as much as when the transistor 30 conducts. When the wire 24 is cut, the capacitor 23 charges up so that a high enough voltage is applied to base 28 for the transistor 30 to conduct and for the circuit to oscillate. When the circuit oscillates, there is 10 or more times the drain on the battery than when the lead 24 is intact. Hence, the circuit has a much longer shelf life with the lead 24 intact than when it is cut. In this regard, when the transistor 30 is not able to conduct, current is unable to flow through the collector-emitter junction to ground. This substantially reduces the drain on the voltage source.

The prior art of record has been reviewed by Applicant and while it is of interest, it does not anticipate or make obvious Applicant's invention.

It is now believed that all of the claims in the application particularly point out and distinctly claim the subject matter which Applicant regards as his invention as is mandated by 35 U.S.C. 112 and are now in condition for allowance. The specification and claims have also been amended to overcome formal objections thereto. Accordingly, Applicant respectfully requests reconsideration and early issuance of the Formal Notice of Allowance.

Respectfully submitted,

/s/ Charles B. Haverstock
Charles B. Haverstock
Registration No. 18,265
Attorney for Applicant

St. Louis, Missouri
January 27, 1987
(314) 241-4427

(LOGO) UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
06/818,260	01/13/86	SHIRLEY J	726

HAVERSTOCK, GARRETT & ROBERTS
611 OLIVE ST.,
ST. LOUIS, MO 63101

EXAMINER	
SWANN III,G	
ART UNIT	PAPER NUMBER
268	4

DATE MAILED: 03/09/87

EXAMINER INTERVIEW SUMMARY RECORD

All participants (applicant, applicant's representative, PTO personnel):

(1) Charles B. Haverstock

(2) Glen Swann

(3) _____

(4) _____

Date of interview 2-25-87

Type: [✓] Telephonic [ ] Personal (copy is given to [ ] applicant [ ] applicant's representative).

Exhibit shown or demonstration conducted: [ ] Yes [✓] No.
If yes, brief description: _____

_____

Agreement [✓] was reached with respect to some or all of the claims in question. [ ] was not reached.

Claims discussed: 2, 3

Identification of prior art discussed: None

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: An Examiner's Amendment (paper #5) was authorized deleting "sealed" in line 3 of claim 2 and changing "trigger" to -- transmitter -- in line 2 of claim 3 for consistency of nomenclature in the claims.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

Unless the paragraphs below have been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (e.g., items 1-7 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

[✓] It is not necessary for applicant to provide a separate record of the substance of the interview.

[ ] Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill

the response requirements of the last Office action.

/s/ Glen R. Swann III
Examiner's Signature

PTOL-413 (REV. 1-84)

ORIGINAL FOR INSERTION IN
RIGHT HAND FLAP OF FILE WRAPPER

(LOGO) UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
06/818,260	01/13/86	SHIRLEY J	726

HAVERSTOCK, GARRETT & ROBERTS
611 OLIVE ST.,
ST. LOUIS, MO 63101

EXAMINER	
SWANN III,G	
ART UNIT	PAPER NUMBER
268	5/B

DATE MAILED: 03/09/87

[Handwriting In Original Omitted]

NOTICE OF ALLOWABILITY

PART I.

1. [✓] This communication is responsive to Amendment filed 1-29-87 .

2. [✓] All the claims being allowable. PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application, if not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.

3. [✓] The allowed claims are 1-18 .

4. [ ] The drawings filed on _____ are acceptable.

5. [ ] Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [_]

been received. [_] not been received. [_] been filed in parent application Serial No. _____, filed on _____.

6. [✓] Note the attached Examiner's Amendment.

7. [✓] Note the attached Examiner Interview Summary Record, PTOL-413.

8. [ ] Note the attached Examiner's Statement of Reasons for Allowance.

9. [ ] Note the attached NOTICE OF REFERENCES CITED, PTO-892.

10. [ ] Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. [ ] Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

2. [ ] APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.

   a. [ ] Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948,

attached hereto or to Paper No. _____. CORRECTION IS REQUIRED.

b. [ ] The proposed drawing correction filed on _____ has been approved by the examiner. CORRECTION IS REQUIRED.

c. [ ] Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.

d. [ ] Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

Attachments:

- ✓ Examiner's Amendment
- ✓ Examiner Interview Summary Record, PTOL-413
- __ Reasons for Allowance
- __ Notice of References Cited, PTO-892
- __ Information Disclosure Citation, PTO-1449
- __ Notice of Informal Application, PTO-152
- __ Notice re Patent Drawings, PTO-948
- __ Listing of Bonded Draftsmen
- __ Other

/s/ Glen R. Swann III

Serial No. 818,260

Art Unit 268

An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the Issue Fee.

In claim 2, line 3, "sealed" has been deleted. In claim 3, line 2, "trigger" has been deleted and replaced by -- transmitter --.

Authorization for this Examiner's Amendment was given in a telephone interview with Charles B. Haverstock on 2-25-1987.

/s/ Glen R. Swann III

G. Swann:pdw

703-557-3374

2-27-87